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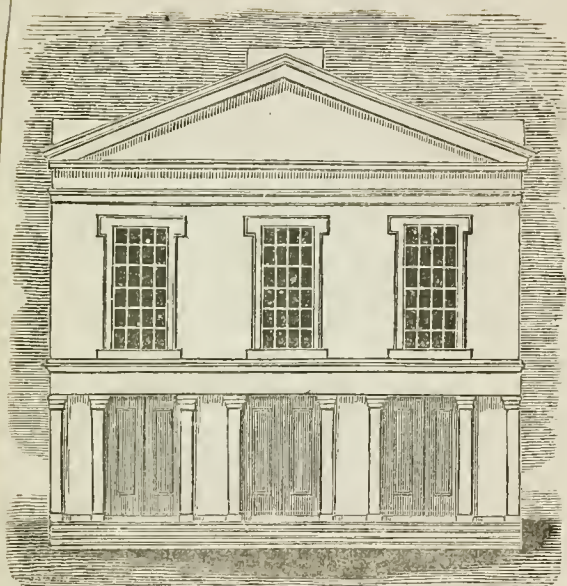












PAVILION FOUNTAIN HOUSE.



THE  
**PAVILION**

FOUNTAIN

AT SARATOGA.

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BY DANIEL McLAREN.

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SECOND EDITION.

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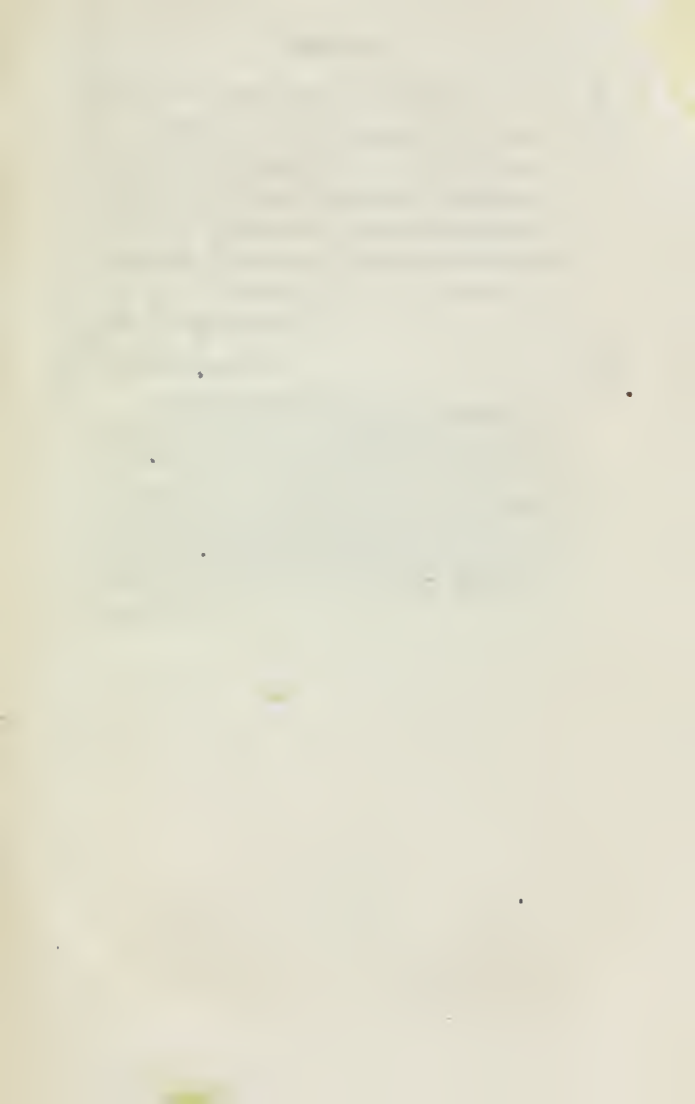
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## PREFACE.

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IN publishing this little book, the object of the writer has been to collect in a convenient form such hints and facts as will guide the invalid in his enquiries after information respecting mineral waters ; and also to record the prominent incidents in the history of one of the most extraordinary natural springs in the world. It may also have the effect to interest enterprising persons in this matter, and lead to the examination of the various salt and sulphur waters within a few miles of Saratoga village.

Among the community at large, there is a profound ignorance upon the subject of medicinal springs, not to say contempt,—a condition which, from whatever cause it may arise, is highly prejudicial, and

must perpetuate much suffering that might be alleviated. By affixing a price to the book just adequate to pay the printer and binder, the author hopes to disseminate more correct views, and do away with the idea that the Springs are only places where wealthy people go to idle away the time.

At this time, every species of science is popularised—manuals are prepared to enlighten any and every body about the philosophy of eating, drinking, clothing, sleeping, and every other condition of the *modus operandi* of eking out life. It is not our design to rival or supersede these works—but only to set up a guide-board here and there to prevent those from going astray whose permanent ill health has not made hygiene a study.

The Pavilion Fountain being of recent development, and being peculiar in some respects, it is desirable to gather together such experience as goes to elucidate the particular adaptedness of its water; for

which reason, the writer earnestly desires that invalids will take the pains to acquaint him with their cases in connection with its use. Correspondence of this nature will be gratefully received.

This edition (the second) is improved by the addition of much interesting matter. Letters and testimonials from patients and practitioners have been introduced, and new cases detailed. Altogether, it is believed that the volume will qualify the attentive reader to visit the springs with an amount of intelligence which will protect him from the imprudences of ignorance and from immature or disingenuous counsel. It has been hurried through the press, on account of the lateness of the season, and inaccuracies may thereby have escaped notice. Craving indulgence for its blemishes, the author commends it to the public—more anxious to interest the community in its subjects than in its literary execution.

It is with regret that we perceive in

Saratoga village, among those whose business it is to entertain strangers, the operation of party and personal spirit in decrying or eulogising one spring or another according to the impulses of interest. Yet, while we regret it, and would caution visitors against such influences, we are but little surprised that a community whose very existence, as it were, depends on the character of its springs, should be divided in partialities.

P. S.—It has been mentioned in the section on “Medicinal Effects” that several cases of Small Pox had been cured by the exclusive use of Pavilion Water, and we should have published a statement from Dr. John Neilson, of Chamber street in this city, to that effect, had it been received in season. As the last sheet is going to press, we have received the assurance from that gentleman that he has cured by the use of this water six or seven cases of small pox, some of them severe (three in his own family), and that *none of the patients are marked*. We have only time for the remark that this triumph of the Pavilion water should be hailed with exultation by all our maritime cities that are so exposed to the ravages of the pestilence. He furthermore states that he has found this water a powerful specific in the treatment of Cutaneous Discases of every description.



## I.—INTRODUCTION.

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### Mineral Springs in general.

“WATERS holding minerals in solution are called *Mineral Waters*. But as all waters, in a mineral state, are either more or less impregnated with mineral substances, the name *mineral water* should be confined to those that are sufficiently impregnated with mineral matter to produce some sensible effects on the animal economy, either to cure or prevent some of the diseases to which the human body is liable.”

The occasion of common springs is well understood, they being the issues of water flowing from greater elevations through subterranean channels; and in respect to *cold* medicinal springs, perhaps there is no objection to the same exposition—in this case, the water imbibing its mineral ingredients from the different strata of earth through which it passes. The production of the carbonic gas always present in greater or less quantities, is more obscure—probably cannot be determined satisfactorily. But in *hot* and

*boiling* springs there is the caloricity to account for; and here the scientific world is undecided, owing to the great difficulty of ascertaining how matters are ordered in the dark chambers underneath us. If we are ready to credit the theory of a vast central fire, whose valves are the volcanoes, and by whose instrumentality earthquakes and great geological changes are effected, then it is very easy to attribute the existence of hot mineral springs to the same cause. Forever preying upon the constituents of the globe, millions and millions of tons of gas must be generated and driven outwards by this enormous conflagration, and finding or compelling egress through the earth, mix with and also impart its heat to whatever offers as a medium of transit.

We cannot turn to scarce any section of the world without finding it provided by Providence with a source of health in natural medicinal waters; and those parts which have no springs make up the lack by importation. The waters of all the celebrated springs in England and Germany are bottled and sent abroad. Much of the wine drunk in Russia under the name of Champagne is nothing but a mixture of sugar and very cheap wine, loaded with carbonic gas from the Franzensbad Spring in Germany.

The efficiency of such waters in the treatment of disease is no modern discovery: they were had recourse to in very ancient times—former generations held them in as great esteem as we do now. The

writings of the Greek and Roman physicians contain not only allusions to the curative properties of certain springs, but distinct and authoritative recommendations of them. At the same time, the popular regard for their valuable qualities was shown by the costly structures which were raised to honor and protect them, as well as by the confident belief that they were the special gifts of the gods, of one of whom each fountain was alleged to be a favorite abiding place, and enjoyed his peculiar guardianship.

The celebrated Bath waters were used by the Romans while in possession of Britain; and that they were held in great repute is evidenced by the discovery, from time to time, not only of splendid baths and sudatories, but even temples, erected, according to their inscriptions, by warriors grateful for the amelioration of wounds and diseases contracted in battle.

In later times, the mineral springs of Europe became the objects of royal solicitude, especially in France, where measures of sound and enlightened policy were the means of increasing their fame and usefulness. Hospitals and bathing-houses were erected, and physicians supported by the munificence of the government.

There are upwards of three hundred spas in Germany, which are frequented by invalids for the cure or alleviation of diseases. Some of them are very ancient, yet still maintain their old renown and original potency. All these spas are very much relied

upon by medical practitioners in that country, who prescribe nothing which can be supplanted by them. Their properties are subjects of very attentive study, and such is the infinite diversity of them, that disease scarce ever exhibits a character for which one or another is not adapted. Great sagacity and learning have been exercised by the German physicians in discovering improved methods of using these waters, and patients not only drink and bathe in them, but also bathe in the gases eliminated by them, and actually immerse themselves in baths composed of fatty mud, saturated with this water, with extraordinary benefit.

Our own country had not been long inhabited before its mineral waters attracted attention ; and the springs of Virginia, whether hot, warm, cold, sweet, red, white, salt, or sulphur, those at Hopkinton, Massachusetts, at Pittsburgh and Bedford, Pennsylvania, at Schooley's Mountain, New Jersey, at Harrodsburg, Kentucky, and at Lebanon, New York, sooner or later became known and valued. Indeed, it is more than probable that in all cases the springs were known and used by the aboriginal inhabitants of the country. This is known to have been the case with that collection of springs which at present claims our more particular attention, those of SARATOGA. Though probably known very early to the frontier hunters, who resembled in their habits their Indian associates, there was no general information with regard to the situa-

tion and nature of these springs until the year 1767. At that time, the Indian agent residing near the Mohawk, Sir William Johnson, being troubled by the gout, or by a wound which he had received some years before, was brought by the Indians to the High Rock Spring, the only one then known. He returned with restored health; and the cure of one so well known as the baronet soon sent abroad the fame of the spring. Soon after, other springs were discovered in the same valley, and they have steadily risen in the opinion of the American public—so much so, that a village depending entirely upon the revenue derived from the waters has risen up around them superior to most country towns in size and appearance.

As the title of this book imports, it is a narration almost exclusively of the discovery and character of one of these springs—for this reason, if for no other, that all the analyses which have been made are of an old date, and have no respect to the changes that all the springs—even Old Congress—have undergone. That they have changed, and that that change has been depreciatory, is indisputable. That of Old Congress is evinced by a recent analysis which we have procured from an eminent chemist, and published in another part of this book.

Besides the springs at Saratoga which have acquired an extensive and prolonged reputation, there have always been a number of petty springs there of

no particular character, as is generally the case in the neighborhood of great ones. When they were discovered and cleared of their natural impediments, they of course at first discharged large volumes of water, very considerably mineralized, and there was every thing to warrant the calculation that they would prove valuable and permanent acquisitions. Proving, however, to be subsidiary veins only, they were sooner or later exhausted, or continued simply as ordinary springs.

Several of these have recently been bought up by speculators, who are endeavoring to foist their waters into the market. Such is the Union, one of the Ten Springs, first noticed in 1814. They were so little thought of that Dr. Steele, in publishing a book, five years afterwards, for the express purpose of informing the public about the Saratoga fountains, makes no mention of them, and in the subsequent and enlarged editions of that work only speaks of them to say that they "never have obtained any celebrity," and "never can rise into any importance." Yet one of these very springs, at this late day, has been introduced to the world under the title of Union Spring, by David Sands of New York.

The mineral matter with which the water of medicinal springs are impregnated is kept in suspension by their fixed air, and without it there would be no union : of course, as the one diminishes, so does the other. This proposition may easily be tested. Ex-

pose a quantity of mineral water, containing ever so great a proportion of earthy substances, and when its carbonic acid shall have escaped, most of the matter will be found to have separated and fallen to the bottom—the liquid will become offensive, and finally putrescent.

The Ballston Springs have lost their efficacy and their character in consequence of losing their gas. One of them, the Washington, discovered in 1817, promised to surpass every spring about it; but its supply of carbonic acid, for some reason, was gradually withheld, until it differed but little from common water.

## II.—THE PAVILION FOUNTAIN.

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Discovery of the Pavilion Fountain—First Attempt to recover it—Suspension—Second Excavation—Final Success.

IN the year 1832, the writer purchased the Pavilion Hotel and other property in the village of Saratoga Springs. At the time of purchasing, it was made an express condition that the boarders and occupants of the Pavilion should have access to the Flat Rock Spring free of all cost. This spring is in the rear of the Pavilion, and has always had a high reputation for its tonic powers. It was not, however, the water which the mass of the visitors preferred. Congress Spring at that time maintained a superiority above all the others. Almost every year difficulties arose between the tenants of the Pavilion and the proprietors of Congress Spring in relation to a supply of water for the use of those boarders who wished to drink it before breakfast without repairing to the spring. For this supply, for one season, the charge of twenty-five dollars had been frequently made, and I believe in some instances paid. When the Pavilion



contained three hundred persons, as it did in the summer of 1839, all that could be obtained was one can of ten gallons—altogether inadequate to supply the demand. Alarmed for the value of my real estate in the village, by this insufficient supply of water, as well as by its evident deterioration, I instituted a search for a spring of superior quality and unrestricted flow.

While thus in search of a spring which should exceed any thing yet discovered, and which, if found within the village, should fix the value of real estate on a firmer basis than it seemed to have in the summer of 1839, I recalled to mind a conversation which I had had some years before with the late Dr. Steele. At that time, he told me that near where the Pavilion Fountain now rises he had himself discovered a spring of superior qualities; that in 1816, he attempted to recover this water from the marsh by forcing down a tube twenty-four-feet long by means of weights. He was compelled, however, to abandon the undertaking through want of funds, and on account of the refusal of his neighbors to assist him. He assured me, however, that if it could be procured unmixed with common water, it would surpass that of any spring that had ever been discovered in this region. The tube which Dr. Steele then sunk, remained neglected until 1839. At that time, I observed the cattle repairing to the spot for the purpose of drinking the water; and on one visit which I paid to it, I found the old village bell-ringer with his leg in the tube. Upon in-

quiring the reason of this strange position, he informed me that his leg was ulcerated, and that some years before, being in the same state, this water had entirely cured it. The immense escape of carbonic acid gas in every direction around this spot, also assured me that here I had found the great crater of mineral matter.

As every thing relating to these fountains has become matter of interest to visitors, I take this method of answering at once the numerous questions which are constantly put to the attendants at the spring by those eager to learn the details of the excavation. In order to satisfy the curious, I shall give a few of the particulars.

In the autumn of 1839, the writer made a contract with the former proprietor, in regard to the piece of land on which stands the spring the discovery of which by Dr. Steele has been mentioned. In this contract, I stipulated that I would proceed to excavate the swamp for the purpose of obtaining a spring, believing that one might be found at least equal, and perhaps superior, to any other in the place. In case of my success, it was agreed to convey to me an interest in the area of ground including the spring in fee for ever.

On the signing of the contract in September, 1839, I immediately commenced operations. My first business was to excavate a space in the vegetable deposit

of the swamp about fifteen feet square and four feet deep. Next, an iron rod was forced down twenty feet, when the mineral water sprang up, very much diluted, however, by its mixture with common water, yet at the same time evolving a great quantity of gas. A contract was then made with Coles and Van Arsdale to make an octagon curb ten feet in diameter and twenty feet in depth, boarded with two inch plank. This curb they succeeded in sinking ten feet. At that depth, the pressure of the surrounding swamp became so great as to break in the north-east corner of the curb; and, discouraged by this accident, the parties threw up their contract. A second contract was made with old Mr. Higgins, pump-maker. He agreed to sink a curb ten feet square and twenty-five feet deep, formed, after the manner of a log house, of solid timbers firmly interlocked. It was also part of his agreement that the curb should be so sunk as to keep the vein of water within it. After much labor and expense, he also abandoned his job, leaving, instead of ten feet square, but about seven feet on the inside at the bottom, and the spring, from the crooked course of the vein, outside of the curb. Thus more than two months, and over six hundred dollars, had been spent in the vain attempt to reach the rock. Determined, however, to go on at any cost, several experienced and resolute miners were brought up from New York, who were engaged at various prices, from one to three dollars per day. Our next exca-

vation was twenty feet square, formed outside of the old curbs. A temporary building was erected to secure the men from the severity of the weather ; fires were kept burning night and day in order to afford warmth and light to the workmen ; two sets of blocks, with tackling and teams, were day and night employed in drawing the water and earth from the pit. As before mentioned, the hole at the top was twenty feet square, and the spring was supposed to be in the centre ; but it ran every way, and after going down twenty-five feet, the main vein was found at the north-east corner of the curb. The first layer of earth through which we passed was vegetable matter or muck ; the second was a thick and solid stratum of yellow clay. After reaching a considerable depth, we were seriously incommoded by the water. But this was not our only difficulty : the rush of gas was so great, that it became absolutely necessary to keep a constant fire within the curb, in order to produce a current of air. This necessity can be explained by relating an occurrence that happened about this time. On one occasion, while the workmen were absent at their dinners, the fire had been suffered to become low ; one of the miners, by the name of John Shaft, on his return, immediately descended ; but he had not quite reached the bottom, when he was seen by those above to grasp the ladder convulsively, and immediately become senseless. Mr. Abraham Vail, the superintendant, arriving at this moment, ordered some

French Canadians to go down and hook the tackle around his body ; but the ready answer from each was, " Me no go." Vail then hastily descended and made a fastening around him ; but so firm was his grasp on the ladder, that it was drawn out with him. He was in the pit about five minutes, but in a little while after being brought into the open air he recovered, complaining only of a pain in his head and stomach. He seemed to have no idea that he had only narrowly escaped death, insisted that he had merely gone to sleep, and stated that his dreams had been of the most delightful kind. He even cursed the men for drawing him out, saying that he had never been happier in his life. Other men were seized with drowsiness ; but no serious accident happened except the one mentioned. Still it was impossible to retain the workmen any considerable time. They generally considered it very hazardous, and on being paid their week's wages, with few exceptions, immediately quitted. Many of the hands were persuaded to leave by a party in the village opposed to my operations, who assured them that the work was very detrimental to health. The same party circulated reports that my excavation would certainly destroy the Flat Rock Spring, and that it had already lowered Congress Spring some feet. The proprietors of the large houses at the south end advised me to go no deeper, assuring me that I had the water as good as I could get it, and at once to tube up. But the greatest

source of discouragement was the great body of water constantly rushing into the pit, amounting at this time to about eighty gallons per minute. Despite all, we persevered, until by sounding on Saturday the thirtieth of December, we found that we had reached within seven feet of the rock. The next day being Sunday, the work was suspended. By Monday morning, the water had so increased as to throw up from its bed the lower inside curb of solid timber; and the earth closing in below, filled up many feet which had been just excavated at great labor and expense. The pit was full of water, and the lowest curb floating on the surface. In addition to this, winter had set upon us in its severest form. Sixteen pairs of blocks and ten coils of rope had been worn out by the constant friction unavoidable in drawing up water and earth. On calculation, I found that two days would be necessary to empty the pit of water. Under such circumstances, I concluded that it was best to suspend operations until spring. The work was accordingly secured, and abandoned for the remainder of the winter. The cost so far for materials and labor actually expended, amounted to two thousand three hundred and seventy dollars.

The work was again resumed on the fifteenth of March. But we no longer drew the water as before by blocks and tackling. A contract was made with Messrs. Putnam and Wright, of Glenn's Falls, manufacturers of hydraulic apparatus, who engaged to

keep the water out fourteen days and fourteen nights by means of two foreing pumps, to be manned by seven men. For this purpose, they brought with them fourteen strong able-bodied raftsmen, as stout a set of men as I ever saw. They went to work, six hours on and six hours off, day and night. In a few days, some fell sick and went home, and at the end of a week they all gave out. The contractors could not get on, and the contract was rescinded. They agreed, however, to leave me the pumps. We had now descended twenty-seven feet. New recruits were brought in, and the pumps kept in action. We soon reached the bottom of the second stratum, formed of clay, and next below found a course of gravel intermixed with rolled stones of various sizes. Our great vein, the Pavilion Fountain, had left us entirely at the north-east corner of the curb; but we followed it below the timbers, with a clay bed above and gravel below. In following the vein, we descended at an angle of about fifty degrees to the depth of about nine feet farther, when we discovered a rock of a sugar-loaf form, very strongly resembling that of the High Rock Spring, with an orifice in the centre. Orders were immediately given to clean the orifice with the hand, and the use of crowbars and all other iron instruments was entirely interdicted. So fearful was I this rock might be injured, that I seldom left the ground day or night, and never without leaving in my place some one upon whom I could rely. I had

now found the object of my long pursuit. The next business was to conduct the water pure from the rock to the great tube within the curb, and thence to the surface. This was done by means of a square pipe, made of sound hemlock, ten feet long and one foot in diameter. Both of these aqueducts were made very strong, consisting of treble walls of inch planks. The upper tube measured a foot at its mouth, and gradually increased in capacity to the bottom, where it was four feet.

The Magnesia Fountain was also tubed up with much difficulty. There were here three distinct veins, —one rising within our curb, one coming directly from the south, and a third from the east. The last two were brought by connecting pipes into a box placed over the one first mentioned, narrowing at the top (being about six feet high) to about one foot square, and arranged so as to fit the tube that Dr. Steele had sunk twenty-three years before; which was twenty feet long, formed of hemlock plank, and found perfectly sound. While putting down this tube, the pumps had to be removed in order that it might be brought into its proper place. And here occurred a great difficulty: several of the men were sick, and the water in a few minutes would have been above our works; but by the assistance of Mr. Hall, of this village, and by most strenuous exertions, the water was confined, and rose in the tube. By the fourth of May, the tubes were set, the clay packed firmly



around them, and the water brought to the surface. Indeed, the water rose some feet above the ground ; but the weight of the column was so great as to burst the joinings of the tubes, and we were obliged to cut the vent down to within a foot of the surface. But the ground having had time to settle around it, it might now be raised with safety three or four feet above its present elevation. Thus were these springs secured only by immense labor, and at an expense of four thousand one hundred and twenty dollars.

The log house still remains under ground, twenty feet square at the top and twelve feet at the bottom ; so that, without much difficulty or expense, the springs may be examined to their greatest depths whenever it may be found necessary.

Convinced of the great and permanent value of the Pavilion Fountain, the writer, in April last, became its sole owner by the payment of a large sum of money.

### III.—MEDICINAL EFFECTS.

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Consumption—Bronchitis—Scrofula—Cutaneous Diseases—Leprosy—Dyspepsia—Liver Affections—Small Pox.

THERE is a very prevalent ignorance in regard to mineral waters, and the number who esteem them as of no more efficacy than ordinary spring water is great. Invalids go to the springs, drink the waters, and return home relieved, improved or quite restored ; yet those sceptics, no wise persuaded, find in the circumstances of the journey, the change of air, the scenery, release from business, and particularly the gaiety of the watering places, ample cause for such striking results. That these *adjuvants* serve to hasten the recovery and render the treatment more pleasant, cannot be denied ; and they are doubtless often essential to the development of the power of the waters. But all of them together, in the most favorable collocation, are insufficient to remove a tithe of the severe, protracted, and often puzzling maladies which are known to recover at the spas.

Even physicians find it for their interest to preserve

silence in relation to mineral waters, or to dismiss them with a sneer. But has your medical friend ever had occasion to treat you, during any protracted ailment or chronic disorder, whether of the stomach or otherwise?—and if so, did he find it necessary to send you alterative powders, saline draughts, and purgative or strengthening mixtures, without end, containing some one or other of the preparations of soda, lime, potash, magnesia, or steel, &c., with a view to restore you to health; if he did, and he relied at the time, upon the efficacy of those preparations for your recovery, why should he deny the same efficacy to the very identical ingredients disseminated through that universal and potent element, water, by the hand of nature, with a chemistry far more cunning than his, assisted, moreover, by a ealorie which he cannot imitate?

Another argument to prove the efficacy of mineral waters may be deduced from the admitted fact, that bountiful Providence has not placed a single natural agent within our reach, which is not possessed of some property calculated to benefit us. The vegetable and mineral world sufficiently testify to this truth. Next, after them, in degree of general diffusion throughout the universe come the natural waters, bubbling or boiling out of the earth's bosom, charged with many of the principles which belong to the vegetable world also. Are these waters likely to have been bidden to flow for nothing?

The most proper, direct and effectual method of putting the merits of the Pavilion Spring Water upon an unquestionable basis would be to give to the public a copy of the Invalid List kept at the Fountain during the season of 1840, wherein might be seen bona fide statements by visitors themselves of the maladies with which they were suffering, the period of time they used the water, and the results of the trial. It would there be seen that such complaints as Consumption, Diseases of the Liver, Bronchitis, and many other serious affections, frequently in advanced stages and ugly conditions, had not only been mollified, not only diminished, but eradicated. This statement we give without any modification, and only lament that the delicacy of the patients themselves should preclude the publicity of names and data. Such publicity is due to the community, and only bare justice to the proprietor of the spring; and we shall venture to take the liberty to introduce a few items as specimens of a multitude.

Recent as is the introduction of the Pavilion Water, it has already achieved a wide and steadfast reputation. The demand has increased as rapidly as the ability to meet it, and is in a great degree from professional and scientific men. The most eminent physicians in the city of New York use it in their families, and advise it in their practice. Physicians totally averse to lending their names to any cause of

a questionable character, have favored the writer with letters of high encomium on this natural panacea. We here present one from Dr. Bedford :

695 BROADWAY, July 10th, 1842.

D. McLAREN, ESQ.

Dear Sir :

It affords me great pleasure to express my opinion of the value of the "*Pavilion Fountain*" at Saratoga. I have been in the habit of recommending it in my practice, and with the most marked good effects. It is a mistake to suppose that the Pavilion water loses its efficacy by bottling. I have received it from the spring in bottles, and have found it to possess all the strength and effervescence so peculiar to it.

G. S. BEDFORD, M. D.,

Professor of Midwifery and the Diseases of Women  
and Children in the University of New York.

In all ailments arising from derangements of the stomach, bowels, or liver, whether organic or functional, the Pavilion water may be confidently relied upon, either as a specific or auxiliary; and as the major part of cases have such an origin, it promises to be of almost universal efficacy. In hardly any imaginable case can it be hurtful. Though doing the office of nearly the whole pharmacopœa, invalids gain in strength and health.

Our invalid list contains accounts of cures of the following diseases :

Scrofula in some forms, (used in milk).

Inflamed and Scirrhus Liver and Spleen.

Bilious state of the Stomach.

Habitual Costiveness.

Hypochondriacal Complaints.

Sick Headache with Bilious Vomitings.

Some kinds of Bilious Purgings.

Jaundice and Biliary Concretions.

Inflammation of the Eyes and Eyelids.

Inflamed Ulcers and Discharges of the Legs.

Some stages of Rheumatism.

Incipient Gout.

Inflammatory Asthma.

Female Diseases causing Obstructions and Sterility.

Piles (in painful cases, water injected).

Dysentery.

Erysipelas.

Salt Rheum.

Mercurial Diseases.

Intestinal Worms.

Measles.

Diseases of the Kidneys, Gravel and Stone.

White Swellings of the Knees and other Joints.

Dropsy arising from Obstructions.

Diseases of the Spine.

Some forms of Paralytic Affections.

Small Pox.

**INCIPIENT CONSUMPTION.**

All water previously used in this place had been found injurious to pulmonary patients, and the impression was that the general rule would hold good with regard to this spring also, and on that account it was not recommended for the cure of consumption. But some who were thus afflicted found it upon trial highly beneficial in incipient pulmonary disorders.

The forms in which this insidious disorder makes its approaches are so various that what might prove highly beneficial to one might be equally injurious to another : it is proper, therefore, for the invalid to use great caution. He should begin by drinking small draughts, and increase the quantity until it acts freely upon the bowels. This moderate use during the day, and occasional application externally with a sponge when the weather will permit, will be found very serviceable. Moderate exercise, sufficient to induce gentle perspiration, and a nutritious diet, with constant attention to the purity and dryness of the air, are necessary to give the water a fair opportunity to meet the disease. It should also be taken with milk, and a milk diet adhered to, unless it disagrees. But in these things the invalid can best regulate himself under the advice of his physician.

Whether this effect is produced by the large quantity of carbonic acid gas, or by the presence of iodine and bromine, or through the influence of vegetable

substances whose existence in the water has just been detected, we are unable to decide. We can merely give the astonishing results.

From several letters addressed to us this subject, we select the following as a specimen :

*Saratoga Springs, August 29, 1840.*

SIR—I feel it to be my duty to inform you, and through you all who may be suffering with diseased lungs, that I visited Saratoga on the 20th of June last past with pains in the breast, slight cough, and hectic fever, so that I was very feeble and reduced to a skeleton.

I was informed by medical men and friends in my native city, New York, that I had the consumption. Nor have I any doubt that such was the fact, as some of my kindred have died of it. I drank from two to three tumblers of the Pavilion water, which always produced an action on my bowels. I also drank freely of the water through the day whenever I felt thirsty. On the second or third day of my drinking it, my pains subsided, my fever left me, and in less than a week my cough had totally disappeared. In two weeks, I felt so strong that I frequently walked to Ballston Spa (seven miles) and back again, making fourteen miles in four hours. My weight had increased so rapidly in three weeks that my friends scarcely knew me.

I must here mention another effect that the use of



this water has upon me, viz : it keeps me in a constant state of perspiration—so much so, that the least exercise, even of walking, will cause it to flow very freely. I am particular to mention this for the reason that the very hottest weather which I had experienced in New York or elsewhere had not produced that effect on me for many years. I will now conclude by offering you my sincere and heartfelt thanks for the generous facility you offered me and hundreds of other sufferers in my presence, to partake of the benefits of this last and best gift of a bountiful Providence to weak, suffering, miserable humanity.

And believe me, sir, I remain gratefully yours, &c.

J. F. DOYLE.

This gentleman is now studying for the ministry at Rose Hill College, four miles from New York city, in perfect health.

The following letter was written by a well-known medical student resident at Hartford :

*Saratoga Springs, December 12, 1840.*

SIR—A nearly recovered valetudinarian, who is drinking with a great deal of benefit the water of the Pavilion Fountain, subjoins a brief description of his own case, and of his improvement, which will serve as a specimen of the curative powers of your spring. Doct. T. F. S. has been a nervous patient of long standing, and for the last ten months has labored un-

der some mental difficulty. Whether this last affection was brought on by a previous incipient phthisis, (as was the opinion of a worthy friend of his, a highly respected practitioner in New Haven,) and at last on account of some mental over-excitement, the brain was made to sympathize with the lungs, or whether some of the symptoms which he has experienced since his second affection (leading to the conclusion that his lungs are slightly affected) are to be considered as the sequel of the former, are questions which he thinks proper to leave for the decision of his learned medical attendants; for the symptoms were in the first case so insidious and scanty, and so unlike all the more prominent symptoms of an incipient phthisis, that he, as a mere learner in the healing art, and neglectful of his health, overlooked them, and rather considered his previous sufferings to be some modification of dyspepsia.

For the purpose of obtaining relief from this mental difficulty, he was for the three first weeks attended by some of the best practitioners in New Haven, during which time he received some benefit, but was by no means freed from his troubles and future dangers. At the expiration of that time, he removed to Hartford as a resident, under the professional attention of a respectable practitioner of that city. There, though under the attention of a skilful physician, his amelioration was but very gradual, laboring there as yet under much nervousness, frequent irritability, consid-

erable heat of the primary passages, accompanied at last by a considerable bodily emaciation. On the 27th, he visited Saratoga Springs for the express purpose of trying its medicinal mineral waters. He is extremely glad to state that, even in the short space of six weeks, he has derived a vast deal of benefit from its use, having gained from five to six pounds of flesh, with muscular tenacity and contraction, and augmented appetite. His color is much improved, his digestion well performed, and his spirits good; in short, there is every flattering sign of recovered health.

The operation of the water of the Pavilion Fountain in his system, taken in the average quantity of four half pints early each morning, two an hour before dinner, and one an hour before supper, is as follows:—1st. Cathartic, causing daily two free alvine evacuations; 2d. It acts as a speedy, gentle, and very copious diuretic, nearly the bulk of the water taken in being discharged in the course of the twenty-four hours; 3d. Tonic; 4th. Alterative; 5th. Expecto- rant; 6th. Diaphoretic; 7th. Siliagogue; 8th. A great promoter of the lachrymal secretions; 9th. Exhilerant—more so even than tea or coffee, though not so permanent.

It only remains for him to congratulate himself for having persisted so firmly in visiting Saratoga Springs; and he sincerely hopes that invalids laboring under

similar complaints will take the hint and profit by this short statement of his sufferings and cure.

These testimonials, both coming from men of respectability, we consider sufficient to call public attention to this peculiarity of the Pavilion Fountain. Seven cases were also reported on the invalid list last summer as cured.

(From the Invalid List.)

May 15. Mrs. Lucretia L. Anthony, Little Falls—cough and pain—*cured*.

July 4. Mrs. Sylvester Wolcot, Trenton—cough and pain—*cured*.

July 23. A. G. M'Carthy, Mayfield—cough and pain—*cured*.

July 23. J. D. M'Arthur, Mayfield—cough and pains—raising great deal—*greatly improved July 29*.

July 25. A. W. G. Powell, Chatham—pains and cough—*pains left and lungs stronger Aug. 1*.

### BRONCHITIS

Is an inflammation and ulceration of the mucous membrane of the bronchial tubes. It is attended with a hacking cough, sore throat, and expectoration.

A glance at the treatment of this disease as laid down in books will convince the most cursory that the Pavilion water must be a powerful ally, if it be not capable of doing the whole business. Drunk freely at all times, and applied with a sponge to the

neck, it has completely cured aggravated cases of this disorder. The Rev. Mr. C——, of Long Island, was cured in 1840; and also a resident of Saratoga village, who had suffered from it for several years. Their names can be had on application at the office

### SCROFULA.

“Scrofula consists in hard indolent tumours of the conglobate glands in various parts of the body; but particularly in the neck, behind the ears, and under the chin, which after a time suppurate and degenerate into ulcers.”

On the invalid List we find the name of Mr. Burgess, of Elbridge, who came to Saratoga in May, 1840, with his legs and arms badly ulcerated with scrofula. He was cured in about six weeks.

*Elbridge, July 23, 1840.*

MR. McLAREN,

Dear Sir,—I promised to let you know how the spring water kept that you put up for me. I have this day made use of the last bottle. It was as good as when it first came out of the spring—not a bit of sediment. No water could keep finer. I intend to be down again this season, and get more of it. I consider my cure radical, for there is no recurrence of scrofula in any shape of manner.

Respectfully yours,

SETH BURGESS.

Here is the testimonial of another patient, whose name can be had on application, now drinking the water.

Dear Sir,—I have had scrofula for the last twelve years about my neck, the glands of which have been swelled into hard lumps. For a long time it gave me no trouble, but within a year has become painful.

For the last fortnight I have been at Saratoga, using the Pavilion water. The consequence is, the lumps are very much diminished, and the pains have ceased altogether.

I bathe my neck with the water six times a day, and use it freely at all times as a drink.

You are free to publish my ease, but I would rather have my name given only to such as are suffering with my disease and apply for information.

Yours respectfully, ———

*Saratoga Springs, July 15, 1842.*

*New York, July 22, 1842.*

MR. D. McLAREN:

Dear Sir—I visited Saratoga Springs in the summer of 1840, along with my daughter, who had a very bad ulcer in the palm of her hand. She used the Pavilion Water very freely, both internally and externally, and improved daily. Being obliged to return to the city, the use of it was continued from

bottles purchased of Gassner & Young. In the course of the fall, the ulcer was entirely healed up, and she has been perfectly well since.

I remember that when you first looked at the sore you called it scrofula, though I had thought it salt rheum. On leaving New York for the Springs her hand was so bad there was danger of mortification, and we had to keep it poulticed with yeast, and dress very often. The cure was unexpected, and has caused me to regard the Pavilion Water as a great remedy.

Yours, &c.

JOHN PIRNIE.

The writer of the above letter is a highly respectable distiller of the city of New York. We well remember his daughter, a young lady about fourteen years of age, with scrofulous features, and an ulcer on her hand as large as a good sized apple. Several times a day the Pavilion Spring Water was poured on her hand with good effect, an operation which, combined with its alterative effects on the system, has cured many bad sores in a very short time.

(From the Invalid List.)

July 4. Mrs. Dudley, Bennington, Vt.—large ulcer—*cured*.

July 6. C. D. Van Allen, New York—humor in the blood—*cured*.

July 18. John Groff, Hopetown—ulcer—*cured*.

**CUTANEOUS DISEASES.**

**SCROFULA—SALT RHEUM—ERYSIPELAS.**—These are diseases which very generally baffle the drugs of the physician. In their incipient stages they may be arrested; but when once thoroughly rooted, intervals of relief are about all that can be secured, perfect cures extremely rare, and mortality not uncommon.

They are diseases, too, which torment and distress patients, and affect the comeliness and expression of the face in a very unhappy manner, frequently without producing that degree of prostration and inanition which exact the tribute of sympathy and reconcile the sufferers to their fate.

During the reign of universal panaceas and cosmetics—an age which we trust has expired—many a female, persecuted and disfigured with one class or another of these diseases, poisoned her constitution, and gave the death-blow to her features, by the use of the nostrums trumpeted and puffed by quacks, into whose hands incurable diseases are apt to fall.

On these obstinate and malignant diseases the Pavilion water has had a wonderful effect. The Invalid List exhibits the names of many who have been cured thereby in a very short time. Its usefulness consists as well in a direct and specific action upon the seat of these diseases, as in a general and remote sanative influence. Bromine and iodine are agents which



have a powerful alterative operation, and modify the mucous membrane in a peculiar manner, for which reason they have held a prominent place of late in prescriptions for the complaints in question; and bromine and iodine are constituents of the Pavilion Water.

Whether these diseases originate in the vitiation of the blood, or in the immediate derangement of the cutaneous vessels, this water is of most certain efficacy. In cases of the first class, the disease is reached through the bowels; and by sponging with it, the contractile powers of the superficies are invigorated, their evacuations rendered more complete and regular, and health and fairness necessarily induced. Cases in which eruptions were entirely removed, occurred very frequently last summer.

#### WESTERN LEPROSY.

The subjoined letter, addressed voluntarily to the writer by Dr. Streeter, gives a brief account of the western leprosy as he suffered it in his own person, and of its cure by the Pavilion water. He considered his recovery so remarkable that he also published the same facts in the form of a handbill. We append an engraving which will give a good idea of the appearance of the disease.

*Saratoga Springs, July 31, 1841.*

SIR—The undersigned has been afflicted a number

of years with leprosy, which he received from his mother. My two children have also had it severely. All my friends in Auburn knew my situation, having resided there for twenty-six years. Physicians in the western country pronounced me beyond the aid of medicine. I heard many favorable accounts of the virtues of a new spring called the Pavilion Fountain, and visited the same with my family during the early part of June. Towards the last of the month, I went to New York, where Doctors Nelson and Hobart, and other eminent physicians, pronounced my disease Leprosy. I had then been drinking the water for two weeks, and thought that the character of the disorder was changed, and that I was much better. I called at the New York Hospital, and a number of medical men there said it was western leprosy. I am now well. So also are my children. We drank freely and exclusively of the Pavilion Fountain, and I am now pursuing my business, six doors south of the Pavilion. I am confident that I have paid more than five hundred dollars to medical advisers, and for the nostrums of the day, without the slightest benefit; but in my opinion, the Pavilion water, judiciously drunk, will be found a sovereign remedy for all cutaneous disorders.

WM. A. STREETOR.

Other cases of leprosy have been cured by the water,—one under the treatment of Dr. Nelson in New York. Besides being applied with a sponge, it should

be drunk in the morning upon an empty stomach to act as a cathartic, and immediately before each meal to act as a tonic.



### COMPLAINTS OF THE STOMACH, LIVER AND ALIMENTARY CANAL.

It is in these complaints that the virtues of the Pavilion water assume their greatest prominence and value. Here it has no rival, and brooks no resistance. Is the stomach torpid or relaxed? it stimulates and strengthens. Are its contents acidulated? it corrects. Has it been distressed with bile? the bile is excluded by the same causes which invigorate and neutralise. Are the bowels inert and irregular? partaking in the same hygieic benefits, and aided by a renovated stomach and restrained liver, their natural tendency to health reinstates them. When these viscera are clogged or constipated, the cathartic properties of the Pavilion water helps to remove their contents; and their labors are lightened by the impetus likewise given to the kidneys and skin.

If, indeed, we have such an ally in contending with the forces which ever beleaguer the citadel of life, then is the issue of the contest at our decision. And that we claim none too much, we appeal to the hundreds who have come to this fountain with systems preyed upon by the long train of affections attendant on weak stomachs and morbid livers, and who have gone away under the inspiration of health.

More than two hundred cases, varying from simple indigestion to aggravated liver complaint, have been

cured by the Pavilion water to the knowledge of the proprietors ; and of these, more than a quarter were cured in the city of New York by drinking it from bottles.

The four following letters will give an idea of the general character of these cases.

*Saratoga, August 4, 1841.*

SIR—I have the highest opinion of the Pavilion Fountain, having been drinking the water with success. For a number of years, I have been very much afflicted with dyspepsia in its last stages, pain over the eyes, loss of appetite, pain in both of the sides, extreme costiveness, raising food after meals. I now find myself entirely well.

Mrs. Field, who had been reduced very low with the liver complaint for many years, has recovered in three weeks by taking this water. Symptoms, pain in both sides and in the head, great debility, and cold sweats attended with fainting.

We are entirely free from all the above complaints, enjoy good appetites and general health.

To D. McLaren.

JOHN FIELD.

*Saratoga Springs, Sept. 11, 1840.*

SIR—I have been an invalid for more than two years, afflicted with Dyspepsia, loss of appetite, costiveness, jaundice, torpid state of the liver, gravel,

and a nervous derangement occasioned by repeated and long-continued remittant and intermittant fevers.

The constant and judicious use of the mineral water from the Pavilion Fountain for three weeks past, has been of great benefit to me, restoring my appetite, recruiting and strengthening my system, soothing my nerves, removing obstructions, exhilarating my spirits, and producing a natural and healthy state of my general habit such as I have not before experienced for many years.

I can, therefore, most cheerfully recommend to the invalid a proper and judicious use of the medicinal water from the Pavilion Spring, to remove chronic derangements of the vital functions. It operates as an evacuent, tonic, and alterative upon the stomach, bowels and glandular organs of the abdomen in a most surprising manner, without producing the least debility or derangement to any part of those organs or the general system, if moderately and judiciously used. The water in the way of bath or fomentation has been found to remove inveterate diseases of the skin.

Yours respectfully,

RUFUS HILL, M. D.

Mr. D. McLaren.

*Erie, Penn.*

Mr. Morgan, the writer of the subjoined letter, put up at the Pavilion Hotel a year ago, believing his case to be a desperate one, and hoping little from the water. He had been attended by Dr. Lindsley, Dr. Francis,

and Dr. Berger, who gave him little encouragement. He is now in perfect health, recovered chiefly through the agency of the Pavilion water.

*New York, August 6, 1841.*

DEAR SIR,—In answer to your inquiry, I beg leave to state briefly that, at the time of my visit last autumn to Saratoga, I was suffering severely from congestion of the bile, as well as from a torpor of the liver, which, with fever, &c. had confined me to my house from March to August; and so very feeble and so greatly debilitated had I become, that neither my friends nor family nor myself had hardly any expectation that I would live to return to the city. Yet the waters of the Pavilion Fountain, joined with the salubrity of the air of Saratoga, and an external application with a brush several times a day, did in the course of three weeks greatly mitigate my disorders, and I was enabled to return to the city with a manifest improvement in health. I continued the use of the water from bottles some time, using them for a week or two, and then discontinuing them for a little period, and again returning to them in the same manner, occasionally adding some other slight remedies; and thus, with a careful attention to my diet, I have become strong and hearty, and am in the enjoyment of health. You are at liberty to refer any person to me who may be unfortunately laboring under the like

maladies, and I will most cheerfully impart such other information as I possess.

I am very truly, &c.

GEO. C. MORGAN.

D. McLAREN, Esq.

This gentleman may be seen at the store of Messrs. Wood & Co., stationers, in Pearl street, near Maiden lane, New York.

*Saratoga Springs, Sept. 12, 1840.*

MR. D. M'LAREN :

SIR: I have more than a year been afflicted with very obstinate costiveness and weakness of the stomach and liver, and have from the exclusive use of the Pavilion Water for four weeks been greatly relieved, and believe the cause of my disorder to be entirely removed.

A. J. ROWELL,

Waterville, N. Y.

(From the Invalid List.)

May 13. Hon. J. J. Beardsley, St. Albans, Vt.—*improved.*

June 20. W. R. Mills, Argyle—pains in the side and great distress—*cured.*

July 4. Mrs. Geo. H. Sheldon, Rapid, Vt.—pain and obstinate costiveness—*gone home well.*

July 10. Rev. T. W. Foil—*recovering.*

July 25. Jas. Porter, Upper Canada—palpitation and pains—*recovering.*



July 27. B. B. Allen, Vergennes, Vt.—pains in the shoulder and back—*cured*.

### VARIOUS DISEASES.

(From the Invalid List.)

June 11. Thomas Cooper, New Hope, Penn.—rheumatism—swelling and pains of the limbs—*swelling gone, and is so well has returned home*.

June 23. John Kimberly, Townsend, Vt.—bilious complaint—*received great benefit and continues to drink*.

June 23. Richard Jones, Canada—ophthalmia—inflammation and weakness of the eyes—*much benefited by drinking and washing in the water*.

July 6. Mrs. C. D. Van Allen, Newark, N. J.—nervous affection and debility—*her health greatly improved*.

July 6. Mr. C. D. Van Allen, Newark, N. J.—gravel and serofula—*gravel greatly relieved and general health improved*.

July 24. T. A. Wheeler, Putney, Vt.—bilious humor—*breaking out in the face—improving July 31st*.

**VARIOLA OR SMALL POX.**

“Small-pox is a disease of a very contagious nature, supposed to have been introduced into Europe from Arabia, and marked by a fever which is usually inflammatory, but now and then is of a typhoid nature, attended with vomiting, and upon pressure of the epigastrium, with pain, succeeded after a few days by an eruption of red pimples on different parts of the body, which in the course of time suppurate, and at length fall off, leaving frequently behind them little pits in the skin, and in severe cases, scars.”

In the fall of 1840, on visiting an acquaintance at 169 Greenwich street, we found the little boy sick with the small pox. It was so named by the physician who was called in, a Dr. Dix, who, we believe, studied with Dr. Mott.

The little boy had been at Saratoga Springs only a short time before, and he asked if he might drink a little Pavilion water. The Doctor replied “Yes, it will do neither good nor harm.” This was the second day of the attack, and the Doctor said *nothing would save him from being marked.*

When the physician had gone, we advised the parent to allow the child to drink night and day as much of the Pavilion water as his thirst craved, and also to bathe him frequently with it. The next morning the Doctor was surprised at the improved condition of the patient, who wanted to get up. On the fifth day

after his attack, he was again playing about, well, and without any marks of the disease.

We obtained of the Doctor his certificate that the disease was small pox that there might be no mistake, and in a few days, with a view to test the water still further, sent two or three gross to the officers of the different hospitals with requests that they would promote my design.

Recently we have heard of other authentic cases, which will soon transpire : so that we have no hesitation in affirming that the Pavilion water will materially alleviate this virulent disease, and aid in its cure.

## IV.—ADVICE TO INVALIDS.

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Residence—Drinking from the Fountain—Seasons—Temperature—Duration of the Course—Clothing—Sleep—Diet—Exercise—Bathing.

**RESIDENCE.**—When an invalid resorts to Saratoga, his first care should be to select a residence convenient to the spring, and stipulate for room and air in abundance. Cure is out of the question if he puts up at a crowded house, sleeps with a duplicate, and dines with five hundred people, one half of whom may be more or less diseased. The atmosphere many times inhaled by such a mass, and some forty colored waiters, is any thing but conducive to convalescence.

**DRINKING FROM THE FOUNTAIN.**—Having domiciliated, the invalid should make himself and his case known, personally or by card, at the Fountain Office; after which he can at all times procure the water in bottles in his own room. The only charge for such a supply will be four cents per bottle, payable to the attendant on delivery. Subscribers to the Reading and Promenade Rooms will have the water without

charge. Of course the water thus furnished will always be fresh from the spring.

It is advisable for invalids to bring medical instructions with them, if procurable from practitioners acquainted with the waters, who, having a knowledge of their constitutions and disorders, can best prescribe for them. There are several very able physicians resident in the village, whose names can always be had by applying at the Invalid Register Office, near the Spring.

The author is led to make this suggestion from the fact that Dr. North, in the Boston Medical and Surgical Journal, writes as follows :

“ Permit me to add, that during a recent visit to New York, New Haven and Hartford, I heard strong and repeated testimony of the lively and agreeable taste of the Pavilion water taken from bottles, and what is of more consequence, its thorough aperient effect on the bowels. One gentleman in New York told me that for several mornings he and his wife had found a single bottle fully sufficient for them both. I saw a bottle opened at E. W. Bull’s, in Hartford, which had been kept since last summer, and it was scarcely inferior in taste to what I have this day taken from the spring. If that bottle was a fair specimen of its general appearance and character, it cannot fail to become a favorite in the large cities ; and I

would respectfully suggest a trial of this water to your numerous reader. Very truly yours,

M. L. NORTH.

*Saratoga, May 18, 1841."*

But in a more recent publication, in which he recapitulates the Medicinal Waters of Saratoga and dilates upon their virtues, he is as silent respecting the Pavilion Fountain as if it were still exhausting itself in the bog !

The dose to be drunk ought always to be moderate at first, and afterwards to be regulated according to its effects, which will depend on the age, sex, constitution and disease of the patient. The water, as it is imbibed in greater or less quantities, acts as a gentle or powerful cathartic, as an alterative, a diuretic, a tonic, or on the circulation of the blood ; and the mode and measure used by each should be determined with an eye to the result desired and to its actual operation on experiment.

If used as an *aperient*, it should be drunk on an empty stomach early in the morning, as by so doing its operation is not neutralized by the presence of food, and is opportunely concluded before the dinner hour. From one to three pints, which should be taken in small doses, are sufficient for most habits. In obstinate cases of costiveness, it may be necessary to add a little magnesia or table salt, say a teaspoonful. It assimilates well with water. Some take pills over

night, and there are cases that require them. Some drink two or three tumblers of the water before going to bed, in order to give it fair play on the bowels, and for the convenience of an early operation next morning. Others, in the city of New York, in chilly or cold weather, have taken the water into bed, and when thus warmed by the heat of the body, have taken it with the happiest effects.

To act as an *alterative*, two half pint tumblers are usually taken before each meal.

As a *diuretic*, it should be drunk plentifully at all times.

As a *tonic*, or to promote the healthy circulation of the blood, drink from a half pint to a pint of the water immediately before each meal; and it may be used at the table in lieu of common water, and pleasantly and beneficially so in combination with milk.

As a general rule, it is best to use the water in its primitive state; for if its action is slow and silent, it is nevertheless sure, judiciously persevered in, to give tone to the stomach and bowels, which are the portals of disease or the avenues of health.

It is common, while using the water freely, for patients to feel inclined to sleep, particularly just after dinner, and some indulge themselves in it for an hour or so with the happiest consequences. In a short time the stupor passes off, preluded, perhaps, by a motion of the bowels or other viscera, leaving the body refreshed and the intellect brightened.

So great is the quantity of free carbonic acid in the Pavilion water that large draughts in patients of weak nerves sometimes produce giddiness. Such patients should wait for the gas to escape, and drink small portions at a time. On the other hand, most invalids find the gas beneficial to them, and for the purpose of imbibing the greatest quantity, they are advised to drink only the top of each glassful and throw away the remainder.

Pain in the head sometimes follows the use of the water, and generally indicates a disordered stomach or torpid bowels. Relief comes with an evacuation.

Children drink at all hours, and feel no bad effects; on the contrary, being kept in a state of regularity, they are exhilarated by it and resort to it with relish.

SEASON FOR DRINKING.—Summer is the popular season for using the water, and perhaps the most auspicious one. It is then a grateful beverage in quenching thirst and alleviating heat; air and exercise are then frequently sought, and are powerful auxiliaries; it is then that the biliary secretions are most likely to become morbid and the digestive functions to languish; and therefore it is that the Pavilion waters are then the most valued and most valuable.

Spring and autumn are likewise proper seasons for its use, on account of the general tendency at those periods to inflammatory and eruptive diseases; and some persons drank it with success through the last



winter. No chill or cold was felt in consequence. I particularly refer to Doctor De Sa—.

The following passages as to the proper season for drinking mineral waters are written by Professor Hufeland of Berlin. They apply more particularly to the German Spas and European Society, yet are of great interest and value to the invalid at Saratoga:

“As to the best time of year for a course of mineral waters, it is obvious that the summer months, when warmth, exercise in the open air, and the joyous appearance of the external world, add their efficacy to the invigorating draughts, must be the most proper season. Indeed, I hold it to be of the greatest importance to choose the height of the summer, as it is unquestionable that warmth is the most essential condition to the efficacy of a course of mineral waters; partly, because it actually increases the power of the remedy; partly, because drinking mineral water makes the body more sensitive, and more susceptible of the impression of cold; and lastly, because warmth, and the open state of the skin which is caused by it, prevent many injurious effects of mineral waters,—I mean especially congestion of blood in the head or chest. For mineral waters have this resemblance to wine and other fermented drinks, as well as to narcotic remedies, that when the skin is open, and the perspiration free, they have less effect on the sensorium; while, on the other hand, when the skin has been closed by cold, they are capable of producing

intoxication. Hence, it is better to begin the course late in the season, when the air still retains the summer heat, rather than too early ; and considering the climate of Germany, as well as the mountainous situation of most mineral springs, the best time is from the middle of July to the middle of August. Earlier in the season, the mornings are too cool, a matter which is of the utmost importance. But if the course is the so-called small one, it may be undertaken with advantage at any period of the year, even in the hardest winter.

“With regard to the time of day, the universally received opinion that early in the morning is the best period, is certainly in general correct. The stomach is then empty, and consequently no collision with any other digestion is to be feared ; the nerves of the stomach are in their highest state of sensibility, being as yet unweakened by any other impression ; and therefore the water acts most powerfully, and the digestive organs, being refreshed by the night’s repose, are able to do justice to the swallowed fluid.

“The water, too, is stronger after its nightly repose, and contains more gas ; so that the first drinker has the advantage over those who follow him in this respect also. The best method, therefore, is to drink the water immediately after rising, and if possible about six o’clock (having regard, however, on this point, to the habits of the patient,) and to continue doing so for some hours, taking gentle exercise at the

same time ; and half an hour after the last glass, to take a light breakfast, which had best consist of coffee and biscuit. Yet there are frequent exceptions to this rule, more especially in this age of weak nerves, when a total change has been effected in the appointed seasons of life. Formerly (and even now in persons of a healthy organisation) sleep strengthened, and morning was the period of fresh and renovated power, and evening, on the contrary, of lassitude ; but now, among the nervous, (and to this class belongs the great majority of persons of rank or refined education,) it is exactly the reverse. Sleep weakens them ; the morning is the season of lassitude, and heaviness of body and mind ; at noon they begin to live ; and the evening is the period of their perfect freshness and power. The cause lies in over-irritation and weakness. A person of this temperament requires so strongly an incessant succession of stimuli and refreshments, and is so little able to live of himself and by himself, that the six or eight hours' interruption of these external influences, which is produced by sleep, puts his whole frame into a state of inactivity and inirritability ; it even makes the circulation of the blood slow and inclined to stop, which necessarily causes a feeling of heaviness, weakness and indolence, on awaking ; nay, in very weakly persons this may even go as far as fainting, which is an entire stoppage of the circulation. The awaking of the eyes is with them no awaking of life ; the other or-

gans, which as yet sleep, must first be awoke and set in motion by continual stimuli, until life is thus brought into that state of excitation, which enables it to be freely employed. Many can attain this point only after they have been awake for twelve hours, that is to say, in the evening. If a person of this constitution is forced to walk for a quarter of an hour early in the morning, he is fatigued till he perhaps faints, and he feels the ill effects of this over-exertion for the whole day. In the evening, on the contrary, he can walk many miles without effort. The same may be applied to the function of digestion; the stomach must be roused out of its slumber by successive stimuli, and raised to the proper degree of activity, if it is to digest; and therefore persons of this class eat nothing at all in the morning, but little at an early dinner, and not with a hearty appetite until later in the day. If such a stomach is filled, immediately after awaking, with a cold, carbonated chalybeate—what will be the result? An indigestion, with all its consequences, such as oppression at the stomach, cramps, headache, flatulence, either costiveness or diarrhœa, want of appetite, and general uneasiness. And if violent exercise is added to this, as is commonly the case, the state of the patient will become still more pitiable from the total exhaustion of strength. We must, therefore, (in such cases) deviate from the ordinary rule, and employ the waters in the following manner:—Immediately on awaking, the patient must

drink something which shall be a temporary stimulus to the nerves of the stomach, such as the best coffee; or if this be unsuitable, an infusion of orange leaves, balm, or peppermint. He must then take gentle exercise, and about two hours after rising should begin to drink the water, swallowing an ounce every six or eight minutes, and taking only the top part of each glass, as being the most carbonated; the exercise must be of the most gentle kind, and ever and anon interrupted by intervals of repose. Moreover, the quantity to be drunk should be divided, and half or the third should be taken towards evening, three hours after dinner, when digestion is ended, and the feeble stomach is far more capable of performing its duty than at an earlier hour; and, in addition to this, stimulants may be administered. A proper regulation of the time of sleep will also be of importance. Not only must the proper time for going to bed be observed, and sleep be enjoyed before midnight, a thing which is always beneficial, especially when drinking mineral waters; but the duration of sleep must be regulated according to the principle laid down above, that *strength is required even for enduring sleep*, and sleep should not be permitted to last till it outlasts the strength of the patient. Persons, therefore, with weak nerves, who easily oversleep themselves, should divide their daily quantum of sleep into two portions, taking two thirds at night, and one third in the afternoon. They must be awake after five or six hours

sleep, and they will feel cheerful and refreshed, and be able to bear their dose of water ; whereas, if they had slept a couple of hours more, they would have fallen into the state of artificial debility.”

**TEMPERATURE.**—The temperature of the water is of more importance than is generally imagined. When cold, it braces the stomach, and refrigerates the whole body ; and invalids should aim to inure themselves to its use in the coldest state, unless it is in some chronic diseases, for which it may be better adapted when warm.

**DURATION OF THE COURSE.**—This should be regulated by the nature of the disease and the effects of the water. Those who visit Saratoga for amusement alone, are satisfied to drink enough to repair the damages of past indulgence or irregularity, or to prepare themselves for future campaigns. They stay but a week or two. Invalids generally remain from four to six weeks ; and are obliged to persevere in a moderate use of the water for months to effect complete recovery from obstinate chronic complaints.

**CLOTHING.**—The following passage contains a valuable hint :—

“I must recommend to all invalids not to trust to nature for the support of a salutary temperature. It is advisable for them to be mindful of the weather, and to change their dress according to circumstances, —even two or three times a day, if requisite. A patient will often be advised to take an early ride or

walk for air and exercise. But the morning may be chilly : he ought therefore to be so clothed as to feel comfortable. The afternoon may become warm and sultry : his garments should be exchanged for those more thin and light. A thunder shower may arise towards evening, or a northwest wind may blow : the dress must be again so changed as to prevent the fluctuations of the temperature from affecting his health."

A judicious physician, in speaking upon this subject, has the following excellent remarks : " Robust persons are able to endure cold better than the delicate, consequently may clothe lighter ; but the precise quantity of apparel which may be necessary for any person cannot be determined by reasoning. It must be entirely a matter of experience, and every person is the best judge for him or herself what quantity of clothes is necessary to keep him or her sufficiently warm and comfortable. The state so nearly approaching to absolute nudity, in which fashionable females now make their appearance in public, is not only highly indecent, but must be very destructive of their health and personal comfort.

" Whilst treating on clothing, I would recommend it to every person to be careful in observing that their linen is properly dried previous to its being put on. This precaution will be particularly necessary in the winter months, as washerwomen are then obliged to dry chiefly by the heat of a fire, and this is apt to be



very imperfectly done. Many lives are annually sacrificed by persons putting on damp linen, as well as by sleeping in sheets not properly dried.

“Another observation which I think it necessary to make on the present subject is, that due care should be taken to change the stockings and other clothing as speedily as possible after their becoming wet by any exposure to inclement weather, rain, snow, &c. Many persons are so imprudent as to neglect this very necessary change, and to suffer their clothes, after such an exposure, to dry on them, assisted probably by going near a fire for some time; but such a practice is always attended with risk, and not unfrequently gives rise either to rheumatism, fever, pleurisy, cough, consumption, or some other disease of a dangerous or even fatal nature.”

SLEEP.—“An insufficient quantity of sleep exhausts the spirits and produces headache, anxiety of mind, and moroseness of temper; moreover it debilitates the nervous system. On the contrary, too great an indulgence in sleep is also injurious, as the muscular motions are thereby debilitated, the nerves and other fibres become relaxed or torpid, and a state of indolent stupidity supervenes, which is not thrown off the whole day; added to which, that sprightliness of life and vivacity are wanting, which are usually the consequences of early rising. It is evident, therefore, that sleep requires some regulation as well as our diet. A habit of retiring soon to rest, and of rising early,



appears to be very favorable to the developement of the powers and the preservation of health. Those who lie half of the day in bed, become effeminate and enervated, and they soon lose that activity, which, properly directed, can alone confer value on life.

“It would appear that six hours sleep every night is sufficient for any adult person during the summer, who is in health, and in winter about seven or at the most eight. Those who indulge for nine or ten hours in bed, are commonly wakeful or restless during the fore part of the night; and when they ought to rise, sink to rest and slumber on till noon, by which imprudent conduct, even the strongest constitution will eventually be injured.

“Nothing, however, more certainly destroys the constitution than that of sitting up a great part of the night, and lying in bed the pleasantest and most healthy part of the day, as is too much the custom with those who lead a fashionable life, thereby converting night into day, and day into night. This plan of proceeding is sure to injure the health of its votaries, and to shorten the natural period of life, and it will undermine the strongest constitution, even if accompanied with habits of regularity in other respects; but how much more destructive must its effects be, when conjoined with intoxication, gambling, sensuality, and other midnight excesses! Persons of athletic bodies may probably hear up for a time under late hours and intemperance; but the delicate and

weakly must unavoidably fall very soon martyrs to such indiscretions.

It is, indeed, melancholy to observe among the votaries of fashion and dissipation, the ill effects produced on their constitutions by their midnight revels. Let any person view their pallid countenances where rouge is not resorted to, as well as their ghastly forms, and they will be well satisfied that inverting the established order of things, by turning night into day, soon robs the blooming cheek of its roses and lilies, brings on early decay, and in process of time destroys the most vigorous frame.

“A due proportion of sleep, taken at proper hours, is absolutely necessary for the welfare of our bodies, which during this period receive a considerable degree of nourishment and renovation: if, however, it be too short, interrupted, or taken at unseasonable hours, debility ensues, and the vital powers, sustaining a deprivation of adequate supply of nourishment, are exposed to injury. A person from this cause will be likely to feel a great degree of languor and weariness when he rises, instead of proper refreshment. It must be evident to every person that a considerable portion of human happiness is founded on the alternate vicissitudes of motion and rest: those, therefore, who neglect the latter, will rarely be gratified by the relish resulting from the former.

“Children may always be allowed to take as much sleep as they please, but it is a very different case

with adults of a youthful age. Quietude and repose best, however, become the constitutions of those who are far advanced in years, since the springs of life in them are rather weakened than invigorated by excessive action and want of sufficient sleep.

“ He that goes to bed early at night will in general be desirous of rising betimes in the morning : moreover, he that accustoms himself to an early hour for retiring to rest, can rarely join in Bacchanalian revels, nor in the fashionable dissipations of high life : his sleep is not disturbed by the effects of unseasonable luxury ; his slumbers are sound and refreshing ; and he rises with cheerfulness and fresh acquired vigor to breathe the morning air, and commence the duties of the day.”

DIET.—That food which was found at home to be nutritious and easy of digestion should be used at the springs. Visitors are warned against the error of supposing that the mineral water will prove an antidote to all the poisons emanating from kitchen and cellar. No panacea, no specific, can ever exempt us fully from the observance of the maxim that “ all excesses are dangerous,” a maxim, the truth of which every one has probably experienced, though it was spoken by the father of medicine ; and it is an old proverb, and perhaps a true one, that a skilful cook is more to be feared in the time of health than an ignorant physician in the time of sickness. The sum of disease and suffering would be greatly lessened if

we would abandon our delicacies and be content to live on a very plain diet.

With respect to drink, it should be remembered that water is the element given us by nature to allay thirst and dilute our food, and that the art of man has hitherto been unable to substitute any thing better. If it is ever unfit, it is owing to hardness or impurity, which may be obviated by boiling. Invalids should avoid the use of hard water, lest it should in some measure invalidate the virtues of the mineral drinks.

Of the water of Saratoga, that which percolates through the sand hills on the east side of the valley is cold, soft and pure, while the water of the west side is generally very hard. The Rev. Mr. Eddy, at the head of Broadway, filtered rain water for the use of his family,—a very effectual way of procuring a pure article.

Invalids who drink tea and coffee while suffering from palpitation of the heart or from dyspepsia, and yet expect the mineral waters to conquer those diseases in the face of such practices, can only be regarded as playing an absurd farce. If sincerely desirous of regaining health, simplicity of diet is obviously the course to be pursued. Such a course would elsewhere be the concomitant of any medical treatment, and there is no reason why its aid should be discarded at Saratoga. Every means of provoking a factitious appetite, or pandering to a morbid

one, should be refrained from. Ardent spirits, wines, malt liquors, rich viands, pastry, unripe fruits, condiments, &c. &c.,—these are to be eschewed honestly and rigorously. Milk, either pure or diluted with warm water, is preferable to tea or coffee. Bread a day old, dry toast, or plain water crackers, with a little cold butter, are less objectionable in all cases than hot buttered toast, cakes, fresh bread, rolls, or muffins. Butter, when new, is innocent and nutritious, and by many is easily digested;—but it undergoes changes, when heated in culinary processes, that frequently render it as noxious as rancid oil. Simple baked fruits, plain puddings of rice or bread, jellies, and food of the like character, are healthful and do not task the digestive functions. They should hold a conspicuous place in the invalid's bill of fare. Having confined himself to food of the right nature, he should guard against indulgence in a variety even of that,—a necessary caution, without attention to which he would be little better off than the epicure.

“Whoso stomach, crammed with many a dish,  
The tomb of roast and boiled, of flesh and fish,  
With bile and wind and phlegm in all ajar,  
And all the man is an intestine war!”

**EXERCISE.**—There is no condition of health more important than exercise. Without it, every thing were nugatory. Activity is imposed on man by his very organization, and he cannot be a sluggard with-

out violating his nature, the penalty of which is suffering. So powerful is it in fortifying the system, that the debauchee may almost find in it a remedy for his excesses. Associated with a correct diet and regimen, its benefit is almost incalculable.

“ By an attention to exercise, the tone and vigor of the body are very much increased ; the nervous energy, and also circulation of the blood, are materially accelerated ; and this increased impetus of the blood through the whole system produces an effectual determination to the surface of the skin, and a free perspiration is the consequence. By the same means, the body is disposed to sleep, the appetite is increased, the tone of the stomach and other organs concerned in the process of digestion preserved, and the blood is determined from the interior parts ; thereby preventing, as well as removing obstructions, and powerfully obviating any tendency to overfulness in the system.

“ Moreover, by exercise, the spirits are enlivened, as well as the body refreshed ; and it is an undeniable truth that where it is neglected, the strength and energy of the whole machine gradually fall to decay ; and a morbid irritability is induced, with a long train of those unpleasant symptoms which usually accompany chronic weakness. The natural powers of the stomach and intestines sustain particular injury, the appetite is vitiated, and the bile and other fluids employed by nature in the process of digestion, are very

imperfectly secreted, or perhaps considerably obstructed: the muscular fibres of the body become relaxed and debilitated; the whole animal economy is disordered; and a train of nervous and hypochondriacal symptoms, together with gout, apoplexy, palsy, glandular obstructions, and many other complaints incident to inactive, indolent, and sedentary persons, come on.

“Exercise certainly gives strength and energy to the body, but it should not be carried too far, or be continued too long, as it may then be productive of mischief instead of benefit. It should be gentle and moderate, and when practicable, be taken in the open air. Another rule necessary to be attended to for rendering exercise advantageous is, that due care be taken that the body, when heated, be not suddenly exposed to cold, either by subjecting it to currents of air, or fresh breezes, or by drinking cold liquids of any kind. In warm climates, exercise should always be taken in the cool of the day, particularly in the morning.

“In nervous affections of all kinds, but more particularly the hypochondriac, as well as obstructions in any of the internal organs, it is more likely to be beneficial than any other, from the parts being universally shook by it, and such persons ought to pass two or three hours every day on horseback when the weather is not wet.

“Next to riding on horseback, a preference should



be given to an open carriage of some kind or other, as a person has the advantage of continually changing the air and breathing it pure, the importance of which must be obvious, as well as beholding the diversity of scenery and country.

“It now and then happens, however, that the motion of either a horse or carriage, be it ever so expertly hung, is too much for the delicate frames of some invalids. In such cases, easy exercise may be obtained by sailing in a small vessel or boat, at proper times of the day when the weather is fine; but when not so, swinging in a cot or hammock may be substituted.

“A person who is prevented from taking exercise in the open air, by inclemency of the weather, or other causes, should by no means remain in a continued state of inactivity; he should engage in some employment or active amusement within doors. Where the taste and inclination extend to any mechanical pursuit, such as that of turning, &c., it ought to be indulged; but where they do not, what are called dumb bells may be substituted for a considerable space of time each day; or the person may play at billiards, or any thing else, rather than take no exercise at all.”

Invalids must take some mode of exercise in keeping with their physical vigor, walking, riding on horseback, or in a carriage, as they may judge proper. Nor is the vicinity of Saratoga without its incentives to rambling. Only four miles from the village is the



beautiful Saratoga lake, a sheet of water twelve miles long, and differing not much from a mile in width, where the lover of the picturesque may angle and ruminate as sentimentally as he pleases. Seven miles distant from this lake is the battle ground where General Burgoyne surrendered to the victorious Americans,—a spot fitted by its fertility of associations to occupy a thoughtful mind, and inspire the patriot with noble sensations. This locality is not without its relics of revolutionary times,—bullets and bayonets, which have survived the work of death and the lapse of years.

There are several pretty cascades in the neighborhood of Saratoga, each of which might form just a pleasant terminus to an excursion, provided the adventurer had not had too recent a view of Niagara. We will mention one, Glenn's Falls, fifteen miles distant, which might repay the journey. Twelve miles from these falls is lake George, with its thousand beautiful isles.

**BATHING.**—In the absence of all facilities for plunging or swimming in this water, the patient is recommended to apply it to the body with a sponge fresh from the spring (procured in bottles or pitchers).

The efficacy of bathing in common water is in high esteem, though it is only a means of health by cleansing the skin. The functions of that membrane are of vital importance, and whatever simply removes its concreted evacuations and leaves the pores open and

free to act, is of great utility. How much more efficient, then, must be the mineral water so applied, which by its stimulating properties gives tone to the vascular system, and by its antiscorbutic properties corrects any tendency to morbid secretions !

## V.—ANALYSIS AND CHEMICAL TESTS.

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MEN first distinguished waters from each other by their taste, and at a later period by their effects in the arts and the occasions of common life, which led to a knowledge of their more prominent qualities; but to what particular substances these qualities were owing, remained almost unknown till modern chemistry had made considerable progress. Hippocrates recommended light, limpid waters, void of taste and smell; the hard, the brackish, and those of lakes and ponds, he rejected. Pliny divided waters into salubrious, medicinal, poisonous, cold, warm, and hot; and for domestic use, he rejected those waters which would not boil pulse, which left a coating on the vessels in which they were boiled, or which produced giddiness or other unpleasant effects upon the system. These observations, though mainly accurate, were founded on knowledge obtained by observing the effects produced by different waters, and not upon any knowledge of their chemical composition. And it is a curious feature in the history of the ancients that, though such close observers of external

nature, they were ignorant of the art of decomposing bodies—in reality, nearly destitute of any knowledge of the science of chemical analysis, as understood and practised at the present time.

Though accurate analyses of mineral waters have only been effected of late years, various physicians and chemists have at different periods published treatises more or less complete upon their healing qualities. But the most of them have been monographs, detailing the nature and importance of the water of some particular spring, or of the springs of some particular locality.

Yet some of them, by giving details of the proper modes of using particular waters are of great value; such modes being often predicated on general laws, and leading to the appreciation and right application of all waters.

The various kinds of *mineral waters* used as remedial agents are usually arranged, for the purpose of description, under the heads *Carbonated*, *Sulphuretted*, *Chalybeate*, and *Saline* waters.

*Carbonated* or acidulous springs owe their acidity to the presence of carbonic acid. When such water is poured from one vessel to another, it sparkles from the escape of carbonic acid gas.

*Chalybeate* springs are quite numerous. They may be known by communicating, when drunk, an inky, styptic taste to the mouth, and most of them by an ochereous deposit, which takes place when such

water is exposed for some time to the atmosphere. The oxide of iron is sometimes combined with sulphuric or hydrochloric acid ; but very generally the iron is a protocarbonate, dissolved in the water by means of free carbonic acid.

*Saline* springs are such as contain one or more salts in solution in such quantity as will cause the water to act medicinally upon the animal frame. Almost all waters flowing near the earth's surface contain more or less saline matter ; but the term *saline* is properly restricted to springs containing salts in solution in such quantities that the waters can be used as active agents in the cure of diseases.

*Sulphuretted* waters (sometimes called sulphurous waters, or sulphur springs) may be known by their peculiarly nauseous odor, resembling that of rotten eggs. Sulphuretted hydrogen, which is given out by these springs, is a very diffusible gas ; so much so, that a single cubic inch of it is sufficient to communicate its offensive smell to the atmosphere of a large room. It is very injurious to breathe air even slightly impregnated with this gas.

The analytic examination of the water of this fountain may be divided into qualitative and quantitative. Qualitative examination is the detection of the several ingredients it may contain, by the use of appropriate tests ; while quantitative analysis is a farther examination, to ascertain the exact weights or quantities of the ingredients. The quantitative ex-

amination of this water is rather difficult, requiring many of the resources of a refined chemical knowledge, together with the address conferred by some practise. It will be proper, therefore, to take such a course as will verify the several ingredients, and, if carefully managed, give tolerably accurate results as to the quantities of the substances contained in this water.

Experiments with tests have been made upon the water, which indicate that it contains carbonate of lime, carbonate of magnesia, and protocarbonate of iron, dissolved in the water by carbonic acid. When the carbonic acid gas is driven off by heat, or exposure to the air, these substances fall in the form of a light fawn-colored powder; and if this boiled water is filtered and submitted to the action of the same tests, it proves to be nearly or quite free from carbonate of lime, magnesia, or iron. From further tests, the mineral water appears to contain chloride of sodium, carbonate of soda, and probably iodide of sodium with bromide of potassium.

**CARBONIC ACID.**—Upon taking a glassful of water from the Pavilion spring, we perceive that it is effervescent and sparkling from the escape of minute bubbles of air, and that this air has no unpleasant smell. We notice also that the water in the spring has the appearance of simmering by heat; but on examination we find that the water is quite cold, and the apparent simmering caused by the escape of the

same kind of gas or air which gave the sparkling appearance to the water in the tumbler. If we fill a glass receiver or phial with pure water, then cover its mouth with the hand and reverse it in the spring, letting the mouth of the phial remain beneath the surface of the water in the spring, it will be evident that the ascending gas which enters the mouth of the receiver or phial, will displace an equal bulk of its water, and if held in a proper position, will in a little while be filled with gas. The receiver or phial must be corked before it is taken from the spring, and this must be done without altering its position. It is best to cork the phial before it is quite filled with the gas, so that the water remaining above the stopper or cork may cut off all communication with the atmosphere and the bottled gas, the phial being kept for that purpose mouth downwards after its removal from the spring. To collect the gas quickly, it is usual, after we have placed the receiver in its proper position, to pass down a funnel and insert its pipe into the mouth of the receiver. The funnel will collect and pass into the receiver all the gas which rises within its circumference. The operation can be repeated with any number of receivers, until enough of the gas is obtained to serve the intended purpose.

The gas so obtained is known to be *carbonic acid gas*, because it is colorless and has no smell.—Because, if we pass a piece of moistened litmus paper into the gas, the blue of the paper is changed to a

faint red, which disappears when the paper is exposed for some time to the air ; showing, that whatever it was which reddened the litmus paper, it has been dissipated in the air, which is characteristic of carbonic acid.—Because we can pour the gas from one vessel to another, owing to its superior weight compared to air ; a portion was poured from the receiver upon a lighted candle, placed in a large glass jar, and as soon as the gas reached the candle it was extinguished ; another portion was poured upon a mouse, the gas was instantly fatal.—Because it formed a precipitate in lime water, which precipitate was re-dissolved by dilute nitric acid with effervescence. These characters conclusively prove the gas with which the water of the Pavilion fountain is so highly charged to be *carbonic acid*.

Numerous experiments were tried with the gas eliminated from the water by the application of heat, and they were attended with precisely the same results. A portion of the gas being passed into a graduated glass tube in a mercurial bath, a piece of moistened potassa was passed up the tube, and it absorbed nearly the whole of the gas. What remained was found to be atmospheric air.

CARBONATE OF LIME, CARBONATE OF MAGNESIA, OXIDE  
OF IRON, SILICA AND ALUMINA.

a If we take a portion of the Pavilion Fountain water (a quart for instance) and submit it to heat, a



great effervescence will take place from the escape of carbonic acid gas. As soon as the gas ceases to escape, or a little before, the water becomes cloudy from the precipitation of the carbonate of lime and magnesia, now no longer held in solution by the carbonic acid. When the water is cold, the vessel is found to contain a quantity of light fawn-colored powder, consisting of a mixture of carbonate of lime, carbonate of magnesia, &c., colored by the oxide of iron. To verify the nature of these bodies, and to obtain their weights, we place the powder on a filter and wash it with pure water till the washings cease to afford a precipitate with nitrate of silver. Put these washings to the original water and set it aside.

b We then transfer the powder to a small matrass, and add to it small portions of dilute nitric acid till the powder is dissolved. We must then heat it a little to insure the peroxidization of the iron. Filter, to separate silica, &c.

c We then make the solution filtered from the silica considerably acid, and supersaturate with caustic ammonia, which precipitates the peroxide of iron, the alumina, and possibly a minute portion of magnesia. To obtain the alumina and oxide of iron separate from each other, boil this precipitate in caustic potassa, which will dissolve the alumina, but not the oxide of iron. This solution of the alumina in potassa is saturated with nitric or hydrochloric acid.

then the alumina is precipitated from it by caustic ammonia, washed, dried, ignited and weighed.

d Take the oxide of iron remaining in (c), (freed from the alumina by potassa) and dissolve it in nitric or hydrochloric acid. Then precipitate with caustic ammonia. Wash this precipitated oxide of iron well, dry it, ignite it in a covered crucible, weigh, and calculate it as peroxide of iron.

e The solution reserved in (c), freed, as related, from the alumina and oxide of iron by ammonia, is now to have the lime separated from it; and as it is already saturated with ammonia, and also contains sufficient ammoniacal salt to hold the magnesia in solution, we precipitate the lime as an oxalate, by using a solution of oxalate of ammonia, as long as it causes any precipitation. This precipitated oxalate of lime must be left for some hours to subside and acquire a condition that will permit it to be washed without a liability to run through the filter. It is then dried, and ignited in a platinum crucible over a lamp. By managing this ignition in a proper manner, we convert the oxalate of lime into a carbonate, and weigh it as carbonate of lime. If the heat with which we have decomposed the oxalate has been too great, we may have lost some carbonic acid. To determine this, we pour a few drops of solution of carbonate of ammonia over the carbonate of lime, and dry it; then weigh the carbonate, and see if it has increased in weight.

f Take the fluid in (e) from which the lime has been separated, and add to it also the washings of the oxalate; evaporate these fluids to dryness; then ignite the dry mass in a covered crucible of platinum until the ammoniacal salts are driven off. We can then add sufficient sulphuric acid to convert the dry mass into sulphate of magnesia; then gently ignite it to drive off any excess of sulphuric acid. The quantity of magnesia can be calculated from the sulphate, or estimated as carbonate of magnesia, which was its state when separated from the water by the expulsion of the carbonic acid in (a.) The exact quantity of magnesia in this compound it is rather difficult to ascertain; but if the method here indicated be pursued, the result will not vary much from the truth.

g It will be seen, if we have been successful in our analysis, that the quart of water yielded a very small quantity of silica (b,) the same of alumina (c,) about one grain of oxide of iron (d,) about fifteen grains of carbonate of lime (e,) and a small fraction over fifteen grains of carbonate of magnesia (f.) Thus we have found in the powder separated from this water by boiling, carbonate of magnesia, carbonate of lime, oxide of iron, silica and alumina.

CHLORIDE OF SODIUM, IODIDE OF SODIUM, CARBONATE OF SODA, AND BROMIDE OF POTASSIUM.

If we now return to the quart of boiled water (a) and examine it, we find it clear and of a saline taste, similar to a weak solution of common salt, but much pleasanter. If we subject this to the same tests that we have done the water just from the spring, we shall find the results to be different, the boiled water being free from salts of lime, magnesia and iron. One very peculiar feature of this water is, that it gives no indication by tests, either before or after boiling, of the presence of sulphuric acid in combination with any one of its bases.

We divide the water into four parts, and taking one of the four, separate the salts from it by evaporation. The solid matter thus produced has the physical characters belonging to common salt, a little modified by the presence of carbonate of soda and iodide of sodium. To verify the presence of an iodide in this, we decompose the iodide, and show that it contains free iodine, by solution of starch, a very delicate test of this substance. Affuse a few drops of water upon the dry mass, which will soon dissolve the iodide, it being a very soluble salt. Drain off the fluid and place it in a capsule or watch glass; then add to it three or four drops of nitric or sulphuric acid a little diluted; and then a portion of prepared starch not larger than a pea,—not too much, as it will

be liable to interfere if the quantity of iodine is very small; and it must be cold, for heat may prevent the development of the color. When the starch is put into the watch glass, the whole must be intimately mixed. If the quantity of free iodine is very minute, the color given to the starch is first a faint rose red, and then reddish purple; with more iodine, purple or blue, and then dark blue; and with excess of iodine, nearly or quite black. The color given by half a pint of water was dark purple approaching blue.

1. Another fourth of the water being taken, solution of acidulated nitrate of silver was added as long as it afforded a precipitate. This precipitate was washed in dilute nitric acid, and then in pure water. It is necessary in this case to wash the precipitated chloride and iodide of silver with a little dilute nitric acid, to dissolve any carbonate of silver produced by the carbonate of soda in the water. The mass of chloride and iodide of silver was placed in caustic ammonia, which dissolved the chloride of silver, and left a small quantity of iodide of silver, of a greenish color, undissolved. The ammoniacal solution of the chloride of silver was poured into a dish, and enough acid added to saturate the ammonia, when the chloride of silver was again precipitated, washed and dried, with the usual precautions to insure accuracy. It was then transferred to a weighed porcelain crucible, heated to fusion; when cold, weighed, and the quantity of chloride of sodium calculated. The

quantity of chloride of sodium was obtained in several other ways, and the results compared.

2. A third half pint of the water was taken. It having been previously ascertained that there was no sulphate in the water; that it changed the color of tumeric paper to a brown, from the presence of an alkali; that it gave no precipitate with chloride of platinum, and that it gave no ammoniacal smell when heated with caustic potassa, no reasonable doubt could be entertained that the alkaline salt in solution was carbonate of soda. To obtain the quantity, solution of nitrate of barytes was added as long as it gave a precipitate. It was then separated, washed, dried and weighed, precautions being taken to guard against any fallacy. From the weight of the carbonate of barytes the quantity of carbonate of soda was calculated.

3. To obtain a more accurate knowledge of the quantity of iodide of sodium in the water, three gallons were boiled down to dryness, and the dry mass washed with alcohol, which dissolved the iodide of sodium. It was also obtained by another process,—a modification of that used in (1) of this section.

4. To the dry mass obtained from three gallons of the water, was put about a gill of distilled water. Then into this solution was passed for some time a stream of chlorine. When it had acquired a slightly yellow color, it was agitated with a little ether, which dissolved the bromine with its characteristic color. But the quantity was too small to be ascertained. A

larger quantity of the water was therefore evaporated almost to dryness. The addition of chloride of platinum, gave a slight precipitate of yellow crystalline grains, indicating a small quantity of potash salt in solution, so that probably the bromine exists in the water of the spring as bromide of potassium.

From these experiments the Pavilion Spring appears to be an ACIDULOUS SALINE WATER. It is remarkable, among other things, for the large quantities of carbonic acid it contains, as compared with other springs, either in this country or in Europe.

One gallon of the Pavilion water is found to contain :

	<i>Grains</i>
Chloride of sodium - - - -	226.58
Carbonate magnesia . - - -	62.50
Carbonate lime - - - -	60.24
Carbonate soda - - - -	4.70
Oxide iron - - - -	4.10
Iodide of sodium, Bromide of } potassium - - - - }	2.75
Silica - - - -	0.62
Alumina - - - -	0.25

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Total grains - - - -	361.74
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	<i>Cubic Inches</i>
Carbonic acid gas - - - -	480.01
Atmospheric air - - - -	8.09

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Total cubic inches - - -	488.10
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One gallon of the Magnesia water is found to contain :

	<i>Grains</i>
Chloride of sodium - - - -	160.20
Carbonate of lime - - - -	48.00
Carbonate of magnesia - - -	44.26
Carbonate of soda - - - -	10.40
Iodide of sodium, Bromide of } potassium, - - - - - }	1.70
Oxide of iron, - - - - -	2.64
Silica - - - - -	1.10
Alumina - - - - -	.80
<hr/>	
Total grains - - - - -	269.10

	<i>Cubic Inches</i>
Carbonic acid gas - - - -	371.00
Atmospheric air - - - -	3.25
<hr/>	
Total cubic inches - - -	374.25

JAMES THOMAS, M. D.

The foregoing analyses of these waters were made publicly by Mr. Thomas, on the 3d of August, 1840, before a large number of scientific gentlemen ; and the amount of gas has several times been ascertained (with the same result) for the satisfaction of individuals who doubted the accuracy of the indications.

Before the operations about the Pavilion Spring had been perfected, and before the water had ac-



quired its settled character, Mr. Walton, one of the former proprietors, anxious to know the constituents of the water, forwarded a quantity in bottles to Mr. Chilton for analysis. The consequence was that the examination proved less gratifying than was expected. But Mr. Chilton has recently made another analysis, which agrees very minutely with that by Dr. Thomas.

Dr. Thomas has also made a second analysis which shows no change in the water.

## VI.—MISCELLANEOUS.

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### THE PAVILION AND MAGNESIA FOUNTAINS.

THESE fountains rise within a short distance of each other; they agree in possessing the same mineral ingredients, and differ only in the proportions of those ingredients. These facts alone would be good grounds for supposing that the two fountains have one and the same source; but that hypothesis is put beyond a doubt by finding that the Magnesia fountain ceases to flow altogether when the volume discharged by the Pavilion is increased, as it may be by lessening the height of the tube to which it is confined. The disparity—and it will seem to be great on reference to the tables of analysis—must be attributable to the difference in the channels by which they are respectively transmitted to the surface. Originating, probably, between the primary and transition formations, the mineral water must be preserved by its prison walls from admixture or adulteration with any extraneous substances; and the Pavilion tube conducts it to us in its natural condition, while the Mag-

nesia current oozes up through loose earth, parts with its gas, and partakes of the common water. The consequence is that the one is effervescent and pungent with carbonic acid, and highly impregnated with mineral agents ; while the other is comparatively insipid and unalloyed.

Among all the celebrated springs of Europe there are but few whose amount of gas at all approaches that of the Pavilion Fountain (a fact which the reader can easily verify by turning to the various tables we have appended), and in its mineral constituents and medicinal properties it is unrivalled on this continent. As we have shown, all the mineral springs in this region have deteriorated in time ; but there are peculiarities about the Pavilion which lead to the belief that centuries may elapse without any such catastrophe. It is the only spring hereabouts which has ever emptied its waters so high above the ground,—which argues both a vast superiority in abundance and force of gas, and also in the plenitude of the remote depository. While some of the springs, in their best days, yielded their water as it were by drops, and the most plentiful could be exhausted or lowered by use, the Pavilion and Magnesia fountains (whose united streams show the capacity of their reservoir) together emit four gallons of water per minute ! and the surplus, the actual waste, runs away in a brook ! At its orifice in the rock, where the current had less gravity to contend with, the discharge was at the

enormous rate of a hogshead per minute ! The column would rise even higher than it does by several feet, were the tube narrowed and elevated,—an experiment, however, which might cause the spring to seek an easier vent, or burst the tube, which was put down at so much expense.

When the water oozing through the bog was traced by excavation to its rocky fissure, and the incumbent mass cleared away, the spring burst up in a flood, and with a noise loud to those at the surface above, but as stunning as the roar of Niagara to the workmen at the bottom of the pit. This sound must have been caused by the sudden enlargement of great volumes of gas, and the unwonted agitation of the water through its secret passages.

“O, my! how beautiful it is!—and how flat!” are the frequent exclamations of ladies on drinking at the Magnesia Fountain,—the first produced by the transparent purity of the water—the last, by its comparative insipidity; and the common remark is, “It is little better than fresh water.” But these contemptuous verdicts are uttered within sight of the Pavilion Fountain, and with its exquisite relish still upon the palate. The proximity of the Magnesia Fountain to its great rival is unfortunate for its reputation. Did it bubble up almost any where else, it would be esteemed a remarkable spring, as it is, setting aside the Pavilion Fountain, really superior to every other in this region. Placed at Ballston Spa,

where the High Tube or Washington stood, the crowds that in 1819 flocked thither would again overflow that village and fill up every farm house for two miles around. The Magnesia water is not much drunk, and but little bottled. Nevertheless, it is proportionally efficient, and acts as a mild, pleasant cathartic.

The Pavilion water now flows over a marble basin, from which its exhilarating draughts may be taken with increased gusto. Pure water is always an object of beauty: how then must the invalid, who feels his system from day to day renovated by its vitalizing properties, admire the mineral water welling up into such a receptacle, and leaping over in vivacious exuberance!

John K. Beekman, Esq., of New York city, who owns real estate to a great extent in the town and county of Saratoga, on drinking this water last summer, pronounced it what old Congress was in its best days,—an opinion which cannot but be relied upon, as his property would be more favorably affected by the greater popularity of the latter spring. Mr. Schoonhoven, the former owner and occupant of Congress Hall, likewise expressed the highest opinion of it. Doctor McLane, Walter Bown, Esq., Abraham Bell, Esq., and a great number of other gentlemen, are of opinion that it is old Congress from the rock. Dr. Stevens, of New York, never before drank such water from bottles. Dr. McAuley found two

glasses sufficient where it took four of the Congress. Major General Scott, who has been greatly benefited by this water, and who has given large orders for it, declares that it is the most extraordinary he ever drank from bottles. Roger M. Sherman, Esq. of Connecticut, said it was beyond comparison; Dr. Townsend and others of Albany that it was the greatest medicinal fountain ever discovered. Prof. Beck exclaimed the other day, "This is the greatest and most surprising medicinal fountain in this region!" A gentleman of our acquaintance lately was advised by Dr. Richard P. Cook (formerly a student with Dr. Mott), while an invalid, to try Pavilion water; and asking the doctor if Congress would not do, the answer was "No—I have analysed the Saratoga waters myself, and know the Pavilion to be the best spring there."

Such is the testimony of physicians, professors, and invalids; and it is but an epitome of the judgment of all the disinterested who visit Saratoga. A medicinal agent so valuable as this ought to be put within the reach of all. It is Nature's great prescription, and must supersede a thousand nauseous draughts. The invalid who is prevented by lack of time or means from going to the fountain, or who is imprisoned at home in a sick chamber, ought to have it sent to him; and this is most effectually done in bottles.

## THE BOTTLING BUSINESS OF THE PAVILION FOUNTAIN.

This water was first bottled on the 23d July, 1840, at the solicitation of a number of gentlemen, who, having been cured by it of dyspepsia, jaundice, gravel, scrofula, and other diseases, were desirous of carrying its benefits into their families. On the first of August ensuing, the water was for the first time bottled and sent to New York, and before the close of navigation that season, about 30,000 bottles had been filled and sent away.

We annex the following letter showing the popularity that this water is acquiring. Messrs. Rushton & Aspinwall are also agents, and have sold a very considerable amount this season.

*New York, July 23, 1842.*

MR. D. McLAREN :

Dear Sir,—In answer to your request for information as to the quantity of Saratoga Pavilion Water sold by us since the 1st of April, 1841, we have to state, that from that time until the first of April, 1842, our sales exceeded four thousand dozen or forty-eight thousand bottles, and that since the first of April last, we have sold some twelve thousand bottles.

In consequence of the "hard times," and to induce a more extensive use of this water in the city and its environs, we have reduced the price of our new mammoth quart and pint bottles, and are now

selling at prices from 30 to 50 per cent. less than Saratoga Water has ever been sold at in this city. Our customers are much pleased with the new bottles, for several reasons—the size being larger than any other in use—from the great strength there is no breakage, and from the shape a complete retention of the gas is effected, so that the water pours out with all the sprightliness of a soda fountain.

We have introduced this water into many families who have never been to Saratoga, and who had no faith in the fact that diseases could be cured or comfort promoted simply by the use of mineral waters. We know of some individuals who have substituted a glass or two of Pavilion for their customary morning bitters to their manifest improvement in health and looks, and who tell us that there is no difficulty in being Washingtonians so long as they can get a supply of such a beverage.

We must give your workmen at the spring credit for their improvement in the art of corking and packing over former seasons—the decrease in breakage in some measure enabling us to reduce the price.

Respectfully yours, &c.

GASSNER & YOUNG,  
132 Chatham street.

Large sales are made by Dr. Heinstreet, in Troy, where water bottled in the morning may be used before night ; and also by Dr. Briggs at Albany.



Messrs. Blake and Trumbull, agents in Boston, are able to sell in that city on one day water that came out of the fountain only the previous day !

Teams daily leave the spring with Pavilion water put up in boxes (two dozen bottles in each box) for Troy, where it is shipped to its ultimate destination.

It is found that there is less breakage by teams than by railroad, and also that the expense is less.

Every bottle that comes to the fountain undergoes four purifications, and upon leaving is inspected by a person whose duty it is to see that it has been properly cleaned, filled and corked. Some have mistaken the matter which appears floating in the water for dirt; it is a vegetable substance with which the water is charged, and may be an important ingredient.

It may be remembered by those who drank Congress water at Lynch & Clark's twenty years ago, that, on account of the sediment, it was then necessary to shake the water as it was agitated at the fountain, in order to imbibe all its ingredients.

If the Pavilion tube should be raised two feet higher, and the discharge effected without any loss of gas, fountains might be filled with the water, and managed as soda fountains are. Refrigerated and so used, the water would inevitably become a popular, as it would be a delicious, drink. It would probably be necessary, however, for the fountains to consist of stone or glass, as no metal is known to withstand its solvent powers.

## PAVILION FOUNTAIN HOUSE.

For the purpose of rendering the Pavilion Fountain as attractive and commodious as possible as a resort, a handsome two story edifice has been built the present season on the adjoining ground, and connecting with it by a graduated piazza. This building is forty by sixty feet, fronting Lake Avenue.

The lower floor is designed for a promenade and bazaar; the upper is partitioned, and fitted for a reading room, and a concert or lecture room. It is believed that this arrangement is suited to the contingencies of a watering place, promoting at once the gaieties of the sprightly and fashionable, and the comforts of the valetudinary.

Having visited the Fountain, the access to which from this house could not be easier, gentlemen and ladies will find in the promenade room the happiest facilities for that exercise which all experience admonishes us should accompany the use of the water. Or it may be considered a rendezvous, where, in social amenities, gossip, bagatelle, and gentle exercise, the body will best receive that fillip which qualifies it to derive the greatest advantage from the use of the water.

The reading rooms, supplied with a variety of the most popular newspapers, from all parts of the country, must become a favorite lounge for all in the intervals of repose, particularly for the elderly or infirm.

The lecture room has an inclined floor, with circular seats, and will accommodate an assemblage of five hundred persons. It will always be freely opened for purposes of instruction or divertissement—for orations, lectures, debates, or histrionic exhibitions.

The promenade room, by a mere change of terms, may be styled a dancing hall, for which it is also intended, and will be used whenever occasion requires.

The privileges afforded by the arrangements above enumerated, are tendered gratuitously to transient visitors; those, however, who have opportunities for making repeated visits, citizens and sojourners, will be looked to for the maintenance of an establishment built expressly for their benefit.

Dating the season from the first of July to the first of October, the charge for individuals has been fixed at fifty cents, and for families at a dollar, for the freedom of the place during that period. An officer will superintend its economy, whose business it will be to record the names of visitors and keep accounts of subscriptions: and to whom application for the use of the lecture room, or for the promenade room for balls, will be made.

The basement of the Pavilion House is appropriated to the business of bottling the mineral water. A very important part of the process is the washing of the bottles, the water for which has been drawn from the high ground in the neighborhood;—the sur-

plus of this water issues in a jet and forms a very pretty trout pond to the east of the house:

A few yards south of the Pavilion Fountain, a building has been put up—60 by 20, two stories high—and forms a part of the bottling establishment. The office for the transaction of business relating to the sale of the Pavilion Water is in this building; and also an office for the registration of the names of invalids, together with particulars of the diseases for which they may be drinking the water. Near by, is a bath room, where single baths of the Pavilion Water may be had fresh from the spring.

A few words to invalids in this connection:—Hundreds will annually repair to this spring, afflicted with very many ailments. Many, owing to the malignity or long-standing of their complaints, or perhaps to injudicious or insufficient use of the water, will go away with little or no apparent benefit;—but many, on the other hand, will here find the succor which art could not afford them—here date their rescue from the body and soul crushing bondage of disease, and go away with elastic limbs and bounding hearts. For the encouragement of those who are suffering in ignorance or incredulity of the virtues of the mineral waters—in fact, for the dissemination of truth and the aid of philanthropy—all are earnestly entreated to have their names, diseases, symptoms, effects of the water, and progress from time to time, recorded in the manner provided; and invalids at a distance,

using the water from bottles, are invited to detail their cases by correspondence with the proprietor.

It is believed that neither the English watering places nor the German spas are more amply provided with the ways and means of physical and mental enjoyment and recreation than Saratoga. Her hotels are numerous, and not inferior to the finest in the country in size, arrangements or *cuisine*; and in the erection of the Pavilion Fountain House, water-drinkers, pleasure-hunters, and adventurers a la mode will find abundant appliances for their various purposes.

#### CONGRESS SPRING.

The existence of this spring was first noticed as far back as 1792. At that time, the water made its appearance through a small aperture in the side of a rock on the border of a brook. The volume emitted was very small—so small, indeed, as to be altogether inadequate to supply even the visitors whom its reputation in a few years drew thither. To enlarge the orifice and increase the flow, the rock was blasted; but, contrary to expectation, the spring was for a time lost altogether. Subsequently, bubbles of air were observed breaking through the water of the brook at a little distance from the former place of issue. In the hope of recovering the lost spring, the brook was excluded from its channel, and the earth excavated to the depth of about eight feet, when mineral water

was discovered rising up in various places, through a bed of very compact marl. A tube, about ten inches in diameter, and of a length corresponding with the depth of the excavation, was planted upon this basis, so as to cover a number of the interstices through which the water came up, and the earth replaced about it. In this curb, the water rose a few inches above the surface of the brook, but was allowed to escape from an aperture in the side a little below, through which it flowed at the rate of about half a gallon per minute.

In 1818, Dr. Steele, a resident physician of Saratoga, published an analysis of this water as made by himself, which allowed it to possess 676 grains of mineral matter and 343 cubic inches of carbonic gas to the gallon, viz :

Muriate of Soda,	471.5
Carbonate of Lime,	178.476
Carbonate of Soda,	16.5
Carbonate of Magnesia,	3.356
Carbonate of Iron, -	6.168

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Total, 676 grains.

Carbonic acid gas, 343 cubic inches.

Such was Congress Spring ; but subsequent analyses show a gradual deterioration, both in respect to its solid and gaseous constituents. In 1825, Doctor Steele published another analysis, claiming for it only 597.943 grains of solid matter and 311 cubic inches

of carbonic acid gas,—a diminution in mineral impregnation of more than seventy-eight grains, and in gas of thirty-two inches, viz :

Chloride of Sodium, (sea-salt)	- 385.0
Hydriodate of Soda,	- 3.5
Bi-carbonate of Soda	- 8.982
Bi-carbonate of Magnesia,	95.788
Carbonate of Lime,	- 98.098
Carbonate of Iron,	- 5.075
Silex,	- 1.5
Hydro-bromate of Potash, a trace	_____
	597.943 grs.

Carbonic acid gas, 311 cubic inches.

Again, in 1840, the water was analysed by Mr. Chilton, of New York city, and a still farther and most surprising diminution demonstrated. The amount of solid constituents had fallen away by nearly 300 grains and the carbonic acid gas by 62 inches, viz :

One gallon was found to contain—

Chloride of Sodium,	- 196.970
Carbonate of Soda,	- 5.210
“ “ Lime,	- 52.128
“ “ Magnesia,	- 38.368
“ “ Iron,	- .834
Sulphate of Soda,	- .310
Iodide of Sodium and Bromide of Potassium,	- 3.780
Silica and Alumina,	- 0.670

grains, 298.270 .

Carbonic Acid, 282.4 cubic inches.

This last analysis has not been before published ; nor was its publication necessary to make the depreciation obvious to anybody. Alarmed at the decay of the fountain, the proprietor last year had the old tube superseded by a new one, under the impression that the former might have become defective and admitted common water. Whatever was the secret, and whatever may have been done over and above the introduction of a new tube to resuscitate old Congress, a recent analysis by Chilton shows a *slight* improvement in mineral matter, and a *very slight* (that is, two inches) improvement in point of gas, viz.:

Solid Contents, 410.265 grains.

Carbonic Acid Gas, 284.65 cubic inches.

Those who can call to mind the properties of the water which was first observed trickling from the rock, and which was afterwards lost, speak of it as very much superior to that which was finally obtained by the diversion of the brook and the excavation of its bed,—superior in the amount of its gas, in its flavor, and in its operation on the system ; and compare it with the water of the Pavilion at present.

Looking at this chain of facts, it appears probable that the attempts to get a larger supply of water shattered and disturbed the natural defences of the spring, gave ingress to other elements, and egress to that all-important constituent, its gas, and subjected it to the decline which has ever since been going on.



THE PAVILION WATER COMPARED WITH CONGRESS  
WATER.

It is the common practice to analyse mineral waters, and to predicate their claims for medicinal properties upon the substances which they are found to contain; and we have done the same thing, but without being convinced that the subject was thereby conclusively elucidated. Chemists, by their agents and reagents, resolve complicate compounds into various constituents, and say *such are their parts*—and doubtless they are; but that a knowledge of those parts is a knowledge of the combination, or that those parts are all the parts, may well be doubted, for the reason that the same chemists cannot reunite them and reproduce the integral article, and that no physician can use *them* so as to produce *its* peculiar effects. These facts open the subject to the very reasonable supposition that mineral waters involve substances which elude detection, and upon which their surprising effects may rest to an incalculable extent. Therefore, the specific virtues of any water, and its applicability to particular diseases, are probably more discoverable by use than chemical exposition.

While the components of the Congress and Pavilion waters are very much alike, their characteristics as units are very dissimilar. How much the differences may depend on causes unknown, we cannot

say—but they may be traced to others that are very evident.

Having enumerated the constituents of Congress Spring as it was in 1819, Dr. Steele makes the following inference. “It will be perceived, from the above statement, that the quantity of fixed air vastly exceeds any thing yet discovered, and that this gives to the waters of this fountain a decided preference over every thing of the kind hitherto known.” Yet the Pavilion water contains more fixed air than the Congress water ever did, and at the present time

*The Pavilion water contains fifty per cent. more carbonic acid gas at the fountain, and twenty-five per cent. more from the bottles than the Congress, and for that reason alone is better fitted for all the purposes for which it is ever used.*

It is better fitted for bottling, because the gas preserves, if it does not cause, the union of the fluid with the solids, without which the *mineral water* would be only *common water*. This gas is liable to escape in the process of bottling, and also after bottling by the casualties of transportation—and every one knows that he can't drink mineral water which has lost its gas without making wry faces. Therefore, the more gas the less liability to such injury.

The more gas, the less specific gravity, and the lighter and more comfortable the water in the stomach. The specific gravity of Congress water at 60 degrees F. is 1006.5, distilled water being 1000; the Pavilion

is 1004.2. If any one is asked "which is preferable, that remedy which distends the stomach and bowels, and weighs down the viscera like the presence of a lapstone, or that which, while it is every way as efficient, only makes the patient more buoyant and lively," the answer can easily be anticipated—and such is the difference between the Congress and Pavilion waters. Drink of the latter unrestrainedly—drink, if you can, a gallon—and the stomach shall suffer no weight and no incubus. In making this assertion we have the authority of many individuals, who tested both waters in 1840 and 1841, while suffering a variety of maladies. Their report was—

*That the Congress water was harsher in its operation on the bowels than the Pavilion, causing at times a good deal of pain, and that more of it was required to operate.*

*That the Pavilion, while it is milder is more active in its operation, attended with no pain or unpleasant feelings—but on the contrary, leaves the patient invigorated.*

*That the Congress, drank through the day, sat heavy, while the Pavilion sat light, and proved refreshing.*

Again—(and we are about to commit ourself in a manner which may expose us to the sarcasms of the learned)—we cannot get rid of the idea that this gas has even a mechanical action upon the human system, diffusing the agents which it embosoms directly to the extremities, and actually bringing them in con-

tact with the diseased parts. Be this so or not, the rapidity with which those agents are transmitted from the stomach to the superficies can hardly be accounted for by the slow course of digestion and sanguification,—for the water is by no means confined in its action to the primary passages—it is a most subtle and powerful *alterative*. Here, then, the gas of the Pavilion gives it the precedence of the Congress.

It has been stated on page 80 of this book, that an analysis was made of the Pavilion water by Mr. Chilton soon after it was tubed up, and that, owing to the newness of the spring, the result was unsatisfactory; and also, that recently the same gentleman had made another analysis, which agreed with that by Dr. Thomas. The former analysis having been published by the proprietors of other springs, for the purpose of invidious comparison, we here publish the latter analysis in full.

One gallon of the water contains as follows :—

Chloride of Sodium, - - -	214.733
Carbonate of Soda, - - -	6.200
“ “ Lime, - - -	64.933
“ “ Magnesia, - - -	54.266
“ “ Iron, - - -	3.110
Sulphate of Soda, - - -	.900
Iodide of Sodium and } Bromide of Potassium, }	- 3.733
Silica, - - -	1.684
Alumina, - - -	.849

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Grains, 350.408

Carbonic Acid,	341.418
Atmospheric Air, - -	5.082

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Cubic Inches, 346.500

JAMES R. CHILTON, M. D.

Practical Chemist.

*New York, July 25, 1842.*

The water used by Mr. Chilton was from bottles filled in the ordinary manner; and yet the analysis will compare advantageously with that of Congress spring, containing 56 more cubic inches of gas. [It contains 198 more at the spring.]

Doctor Thomas has within a few days ascertained the quantity of iodine and iron contained in a gallon of Congress water as it now is, viz:

Carbonate of Iron, 4.54 grains.

Iodide of Sodium and	} 2.95
Bromide of Potassium,	

It will be seen to contain a grain and a half more iron, while it contains less iodine than the Pavilion water.

It is hoped that visitors at Saratoga will exercise their own judgments in using the mineral waters, without respect to the officious advice which they will receive on every hand. Such counsel may or may not be valueless—but it should be received with great care.

THE following article is too good to be lost sight of, and we republish it, though relating to an event the memory of which we have no disposition to revive for any other purpose than that of mutual pleasantry. It was written by Col. Stone, of the New York Commercial Advertiser, to describe the Indignation Meetings that took place at Saratoga about a year ago, during the reign of the dog star, and is brim full of fun and sparkling conceits.

### THE BUBBLES OF SARATOGA.

"DON PEDRO:—Officers, what offences have these men done?"

"DOGBERRY:—Marry, Sir, they have committed false report; moreover, they have spoken untruths; secondly, they are slanderers; sixthly and lastly, they have belied a lady; they have verified unjust things; and, to conclude, they are lying kuaves."—MUCH ADO ABOUT NOTHING.

Dear Messrs. Editors, your dull imaginations can't come within gun-shot of a just conception of the awful state of things here in this beautiful and recently quiet village! Why, good sirs, we are in the midst of a storm of popular commotion that might lead to the most frightful consequences had we only a Mackenzie, or a General Sutherland, or some yet more terrible fellow, "to lead up the death-dance of revolution," as Mr. Burke has it. But I am so full of the subject that I must cease my exordium lest I never get through it. Let me, then, come to the point.

Until Monday morning of the present week, every thing was as quiet here as need be. Hundreds of visitors of all descriptions were arriving or departing, or both, as usual by every train of cars plying between the Springs and Troy and Schenectady. The hum of cheerful voices was heard within the walls of the well-filled hotels. Bright flowers were blooming in the gardens, and bright eyes beaming in the drawing rooms. The deep green shrubbery was affording grateful umbrage to the elder visitors, who were sleeping upon the piazzas, and the loafers with shaggy whiskers and fierce-looking mustaches, who were smoking. Coachmen were listlessly cracking their whips, and the horses brushing away the flies, while the ladies and gentlemen destined for a drive to the lake were getting ready. The landlords were iceing their wines, and the cooks spitting their chickens. In a word, the forenoon of Monday was as quiet and uninteresting a day as ever shone upon man in his superlative state of laziness at a watering place, until the news was bruited that stirred up the commotion of which I am striving to get a chance to speak. And when it did come out! But "Gods!" as Syphax says to Sempronius, "I must be cautious!"

Well, then, without any further accumulation of words, I will try to enlighten you in regard to the EMEUTE which I took up my pen in utter despair of being able to describe. It was this—that is to say—you doubtless remember coming hither last summer to visit the new Pavilion Fountain, in consequence of the description I gave you thereof in one of the letters written to myself during the summer solstice of that ANNO DOMINI. Well, that said Pavilion Fountain has continued to rise up in silver bubbles, in its own undiminished volume, like a torrent of gems springing into crystal existence, ever since. Fame has also sounded its praises over a space so vast as almost to be boundless; and so popular has it become that, could the houri escape from Mahomet's paradise, I doubt not that they would be flocking hither to dip their gossamer pinions in the fountain, that on their way back to the pearly portals of the Prophet's seraglio their brilliancy might eclipse, not merely the glittering dew-drops, but the sparkling stars!

Now, as I was about to say before my wild fancy led me into this last flight of grandiloquence,—but good rhetoricians, you know, should ever adapt

their language to the subject in hand,—this said Pavilion Fountain, continuing, as I have described, to rise and bubble, aliko in sunshine and moonshine, in its own unalterable beauty, has become an object of unspeakable interest to the inhabitants of this delectable village,—residents and cosmopolites,—some just notions of the value of which have at length penetrated the inner temple of their understandings. But, most unfortunately, the fountain, instead of descending from the skies, that, like the rain and the dew, it might be free to all, ascends from the place of the gnomes—those miserly spirits who have monopolized the mines,—and the land round about its margin belongs to somebody instead of nobody, and that somebody is so old-fashioned in his notions that he thinks he has a better right to what is his own than anybody else.

Well, as I have already said several times, acting upon this principle of claiming what is their own, and doing what they please with it, Messrs. M'Laron, Walton & Co., those Mr. Walton being absent, and Mr. M'Laron and the junior Walton owners,—on Monday morning caused it to be made known that they had determined to levy a small excise upon the waters of the fountain. Only think of it! AN EXCISE UPON COLD WATER in these enlightened days of temperance!—Whiskey free and duty upon water! "A swate land of liberty this," said Pat one day, endeavoring to take up a stone in the pavement to cast at a dog—"a swate land of liberty, where the dogs are let loose and the stones are tied fast!" You may well imagine what a storm of indignation was kindled, and how, like a fire upon the prairies, it spread with the report and grew fiercer as it spread.

The choicest spirits, whose noses bear witness to the quality of spirits they had heretofore been drinking, were in an instant seized with a marvelous thirst for cold water. Groups of loafers gathered at the corners of the streets in eager consultation. The grave and more sedate citizens looked graver and shook their heads. The visitors blessed themselves that Congress Spring, and a dozen fountains besides, were welling up free. Every other subject was forgotten by the people. The neighboring village of Waterford, which but two days before sat like a princess of beauty upon the bank of the Hudson, but now smoking in ruins, was not thought of. The Canadian patriots, whilom the chiefest favorites of Saratoga, were forgotten. McLeod was dimly remembered as of a generation before the flood. Justice Cowen, the black-letter pride of the village, as every body knows, had gone to Utica with an elaborate opinion, grievously learned upon every unessential point, and silent as the Sphinx upon the only real question at issue,—and yet Mr. Justice Cowen and his opinion were aliko unremembered in the midst of this terrible tempest in a ten-pot.

It was in vain that here and there an individual ventured to hint that the Pavilion Fountain was private property, and that its owners had as good a right to avail themselves of its product as though it were a gold mine or a bod of antiracite. It was in vain that the proprietors protested that the tax was intended only to remunerate themselves for the heavy expenses incurred in rescuing the sanative torrent from mingling with extraneous and less palatable waters, and for the improvement and embellishment of the adjacent grounds. It was in vain they protested that invalids indeed were to have the waters free, and that a pump was to be erected in the street by the gate, where all could drink their seventeen tumblers before breakfast without charge. Vainly was it urged that those only were to be taxed who carried away the water in bottles and reservoirs, or who preferred to enter upon the premises and enjoy the improvements to be made as well as the waters. The sovereigns were determined that the waters should be as free as they boil up from the earth's bosom in beauty, and every one should have liberty to drink therefrom, after the manner of Gideon's thirsty soldiers, by poking their noses into it if they pleased.

Well, after divers intense consultations, an indignation meeting was resolved upon for the afternoon, to be held in a grove consecrated to the cause of patriotism last year by the lofty eloquence of Webster, and desecrated a



few days afterward by the sub-treasury vagaries of Silas Wright. The meeting was holden, and then were the bottles of indignation uncorked. The Hon. Thomas P. Marvin was called to the chair. All the loafers of the village were gathered there, besides many of the gentlemen resident and transient. I will not attempt to give the exact language of the orators, who dwelt most vociferously upon the grievance which had provoked the meeting. You may judge whether the following was or was not spoken. The speaker may be presumed to have had a patch upon each elbow.

Gentlemen Jacksonians—I beg pardon—Van—Fellow citizens, I mean, of this outrageous community. This is a land of free commission and super-nationness. Exaggerate yourselves, then, and hear the oracle I nm about to speak of in all candor and sufficiency. Friends of the canvass and the veto, shall we be made slaves to M'Laren, Walton & Co.? Shall we, I say, submit to their contumaciousness? [No, no, no, no!] Shall we drink water with a tax on the top of it? [No, no, tar and feather them!] Well, then, that's right. Let us rise in our supercilious majesty and crush the growing powers of these monopolists. [Aye, that's right. Down with the banks!] I see, fellow citizens, you feel right—Let us then exaggerate ourselves to the full circumference of the people's majesty, and do as I premise." [Immense applause!]

There were, however, several discreet gentlemen present, residents and others, and after the effervescence of the agitators had evaporated in the shape of a resolution, strong as the curse of Tristram Shandy, that

Those who had never drunk before,  
Would drink the Pavilion Fount no more,

a committee was appointed, consisting of Dr. Freeman, William L. F. Warren, Esq. and some others whose names I do not recollect, with instructions to confer with the proprietors of the fountain, and make known the popular feeling in regard to the proposed tax. The meeting adjourned over to the afternoon of Tuesday, then and there to meet again, and hear the result of the negotiation. Yet before the dispersion, many exciting and inflammatory remarks were made; in consequence of which, doubtless, a part of the enclosure of the fountain was torn down by portions of the populace unknown. In consequence of this outrage, McLaren, Walton & Co. issued a hand-bill, couched in language somewhat harsh, offering a reward of fifty dollars for the discovery of the offenders. This hand-bill was the cause of fresh excitement on Tuesday—especially among those who probably feared betrayal. The composure of the more sedate was also somewhat disturbed by the language of the handbill, stigmatizing, as it did, the meeting as a mob.

The meeting of Tuesday afternoon, therefore, was reassembled in no very good humor. Still, order was preserved for a while. Judge Marvin remounted the rostrum, and Dr. Freeman reported the correspondence that had taken place between the parties, which was sufficiently pacific. The lessees of the fountain stated that their senior partner was absent; of the two present, one was not disposed to yield upon compulsion, while the other, Mr. M'Laren, professed a willingness to be governed by the decision of the absent partner on his return—the fountain, meanwhile, to remain open and free as before.—The more respectable portion of the meeting thought the letter satisfactory for the present; but the universal suffragers judged otherwise, and were for proceeding farther. Mr. Warren thereupon rose and made a few conciliatory remarks, as also did a gentleman of your acquaintance from New York. A motion was then made that the committee be continued, to confer with Judge Walton on his return, and report at a future meeting. This resolution was adopted, and a motion made for adjournment. But the majority would not listen to it. After the trouble of coming together, they were determined—some for mischief, some for fun.

Many were the speakers, and queer were some of the speeches. The reading of the handbill was called for by the hot heads, and opposed by the



cool ones. Among the leaders of the former was "Squire Cocinero," who insisted that the letter from the lessees was evasive and unsatisfactory. He praised the absent partner of the firm, but abused McLaren at a great rate. Much clamor was now awakened, and the reading of the handbill demanded with loud vociferation. The Chairman called to order; but order was no longer the divinity of the grove. The chairman said he had neither seen nor heard of the handbill. "It calls us a mob," said one. "Let the infamous handbill be read," said the chairman. "How does the chair know it is infamous," inquired somebody, "having never seen it?" But no matter; the offensive document was read, and received with a dismal hiss, such as Satan was greeted with on his return from Paradise, after poisoning the ear of Mother Eve, to Pandemonium.

Nor was this all. Notwithstanding the former vote to await the return of Judge Walton, the leaders, 'Squire COCINERO and others, now brim full of indignation, were determined to let it out in speeches and resolutions. The 'Squire made many inflammatory remarks and was cheered. Violent exclamations were uttered on all sides. Virgil somewhere speaks of a tempest of the waves, during which Neptune thrust his bald head above the turbulent billows, and by a wave of his trident hushed them to repose. A peaceable gentleman from New York now attempted a similar experiment. But without the like success; for the oil which he threw upon the waves only caught fire, and the sovereigns proposed sending him home by an extra train—a modern express. "Whar has the stranger been travelling to? that's what I'd like to know," said Mr. Nobody.

But the most picturesque performance of the afternoon was the speech of Mr. FERULA BIRCH, a gentleman whose vocation it is "to teach young ideas how to shoot"—an individual who knows all about the heathen ancients, as the Red River lawyer said. Shades of Cicero and Themistocles, how he did rave—roaming with Romulus, ranting with Remus, ripping with Euripides, and canting with CANTHARIDES, according to the before-mentioned Red River barrister. "I should like to know what these men mean, and so would you, gentlemen, for I can see the fact sticking out. What have these men to do with the free laws of old Saratoga, where Gates ran away and Burgoyne and Algernon Sidney died on the scaffold! What would John Hampden say, could he rise from his bed of glory down there by Schuylerville? What?"—but I cannot follow the earthquake eloquence of Mr. Birch, which, as Counsellor O'Botherum would say, "shone tantamount to the meridian, when PHEBE HERSELF shall become a twinkling spot among the littler of the little stars!"

Mr. Birch having concluded, a fierce resolution against drinking any more spring water from the Pavilion was adopted, after a speech of Æolian gentleness compared with the former. Another resolution was also adopted, in terms requesting the boys not to break down the fixtures of the fountain that night. This was upon the principle of the charge of the president of a university, who once dismissed a class with grave injunctions not to seize a certain obnoxious tutor and souse him with cold water at the pump! The admonition in both cases had the desired effect. The tutor was soundly ducked at the pump, and on the night after the resolution the bottling-house of McLaren, Walton & Co. was fired by the torch of an incendiary. But a watch was kept, and the flames were extinguished before much progress had been made.

Hail Columbia! Happy land!  
Plenty of water and plenty of sand!

Such was the distich once uttered impromptu by a New York dentist, under the inspiration of Congress water—it was the only metre he was ever guilty of making—and therewith will I conclude my first letter of the present season to myself.

THE FOLLOWING TABLES GIVE THE QUANTITIES OF MINERALS AND GAS CONTAINED IN A WINE PINT OF THE SEVERAL WATERS, THE FORMER IN GRAINS, THE LATTER IN CUBIC INCHES.

MARIENBAD (Kreutzbrunnen, analyzed by BERZELIUS, 1822.

Muriate of soda.....	13.564
Sulphate of soda.....	38.116
Carbonate of soda.....	10.257
Carbonate of lime.....	3.934
Carbonate of magnesia.....	2.719
Phosphate of alumina.....	0.003
Silica.....	0.386
Oxide of iron.....	0.176
Oxide of manganese.....	0.038
Carbonate of strontia.....	0.004
Carbonate of lithia.....	0.114

grains, 69.311

Carbonic acid gas, 34.2 c. i.

KISSINGEN (Ragozi,) analyzed by KASTNER, 1830.

Muriate of soda.....	26.050
Sulphate of soda.....	2.000
Carbonate of soda.....	0.820
Phosphate of soda.....	0.170
Sulphate of lime.....	2.500
Carbonate of lime.....	3.550
Muriate of magnesia.....	6.850
Carbonate of magnesia.....	2.500
Muriate of potassa.....	0.910
Alumina.....	0.180
Silica.....	2.750
Oxide of iron.....	0.680
Hydrobromate of magnesia, muriate of ammonia, organ- ic extractive.....	traces

grains, 48.460

Carbonic acid gas, 26.25 c. i.

Temperature, 53 F.

BOCKLET (Ludwigsquelle,) analyzed by VOGEL, 1823.

Muriate of soda.....	27.500
Sulphate of soda.....	6.250
Sulphate of lime.....	0.500
Carbonate of lime.....	7.250
Muriate of magnesia.....	0.750
Carbonate of magnesia.....	1.750
Muriate of potassa.....	1.250
Silica.....	0.500
Oxide of iron.....	.650

grains, 46.400

Carbonic acid gas, 31 c. i.

Temperature, 52 F.

SCHWALBACH (Weinbrunnen,) analyzed by KASTNER, 1828.

Muriate of soda.....	0.186
Sulphate of soda.....	0.600
Carbonate of soda.....	0.175
Phosphate of soda.....	traces
Carbonate of lime.....	2.110
Carbonate of magnesia.....	3.125
Muriate of potassa, alumina, silica, and oxide of manga- nese.....	traces
Oxide of iron.....	0.835

grains, 7.031

With traces of strontia, iodine,  
iodate of potassa, sodium, li-  
thia, and vegetable extrac-  
tive matter.

c. i.

Carbonic acid gas..... 26

Temperature, 48 F.

MARIENBAD (Ferdinandsbrunnen,) analyzed by STEINMAN, 1828.

Muriate of soda.....	8.996
Sulphate of soda.....	22.536
Carbonate of soda.....	8.549
Carbonate of lime.....	4.016
Carbonate of magnesia.....	3.049
Silica and alumina.....	0.680
Oxide of iron.....	0.400
Oxide of manganese, carbon- ates of strontia and lithia....	traces

grains, 48.226

c. i.

Carbonic acid gas..... 40

Temperature, 49 F.

SCHWALBACH (Paulinen,) analyzed by KASTNER, 1829.

Muriate of soda.....	0.030
Sulphate of soda.....	0.025
Carbonate of soda.....	0.450
Carbonate of lime.....	2.055
Carbonate of magnesia.....	2.750
Muriate of potassa.....	0.001
Silica and alumina.....	traces
Oxide of iron.....	0.650
Oxide of manganese.....	0.002

grains, 5.963

Carbonic acid gas, 39 c. i.

Temperature of spring, 49 F.

SELTZER, analyzed by BISCHOF,  
1826.

Muriate of soda.....	16.285
Sulphate of soda.....	.565
Carbonate of soda.....	15.409
Phosphate of soda.....	.723
Carbonate of lime.....	1.867
Carbonate of magnesia.....	1.595
Phosphate of alumina.....	.289
Carbonate of iron.....	.151

grains, 36.884

Carbonic acid gas, 15.5 c. i.

Temperature, 59 F.

GEILNAU, analyzed by BISCHOF,  
1826.

Muriate of soda.....	0.297
Sulphate of soda.....	0.204
Carbonate of soda.....	12.048
Phosphate of soda.....	0.739
Carbonate of lime.....	1.986
Carbonate of magnesia.....	2.233
Silica.....	0.110
Iron and manganese.....	.160

grains, 17.777

Carbonic acid gas, 23.75 c. i.

Temperature, 51 F.

EGRA (Salzequelle,) analyzed by  
BERZELIUS and TROMSDORF, 1822.

Muriate of soda.....	9.216
Sulphate of soda.....	17.933
Bi-carbonate of soda.....	9.230
Carbonate of lime.....	1.606
Carbonate of magnesia.....	0.132
Silica.....	0.333
Oxide of iron.....	0.016
Manganese, lithia and strontia, traces	

grains, 38.466

Carbonic acid gas, 30.75 c. i.

Temperature, 52.5 F.

HOMBURG, analyzed by LIEBIG,  
1836.

Muriate of soda.....	79.148
Sulphate of soda.....	0.276
Muriate of lime.....	7.756
Carbonate of lime.....	9.988
Muriate of magnesia.....	7.787
Carbonate of magnesia.....	1.995
Silica.....	0.313
Oxide of iron.....	0.460

grains, 107.723

Carbonic acid gas, 48.5 c. i.

Temperature, 53 F.

The foregoing are some of the most remarkable of the German Spas—the analyses by eminent chemists—in comparison with which the Pavilion will suffer none in the reader's estimation.









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